

# EIPT Comprehensive Report – Krytox Building J26

Chemours Chambers Works #65473 EIO190003

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December 2019

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# 1.0 Introduction

As part of voluntary efforts designed to reduce hexafluoropropylene oxide – dimer acid (HFPO- DA) emissions from the Chambers Works facility, Chemours installed a carbon adsorption system in the Krytox manufacturing process in July 2019. After discussion with the New Jersey Department of Environmental Protection (NJDEP) air permitting section, the installation of the system and associated sampling and emissions reduction evaluation was conducted in accordance with an Environmental Improvement Pilot Test (EIPT) approved by NJDEP on July 17, 2019 (see Appendix A).

Per conditions of the EIPT, Chemours is submitting this report to document the results of the EIPT and summarize the effectiveness of the carbon adsorber (AD-1) in reducing emissions from the Krytox manufacturing process.

### 1.1 Background

Chemours operates the Chambers Works manufacturing plant in Deepwater, New Jersey. Currently the plant has three manufacturing areas along with supporting units which Chemours operates in accordance with Title V Permit #65473. While the existing Krytox batch process emission unit currently complies with the State of the Art (SOTA) requirements for organic compounds, the intent of the EIPT was to determine if adding carbon adsorber(s) could further reduce emissions of HFPO-DA and perfluorooctanoic acid (PFOA), as well as other perand polyfluoroalkyl substances (PFAS) from the Krytox batch process unit. The application was approved on July 17, 2019 and extended on October 3, 2019. After the EIPT is completed, Chemours plans to incorporate the carbon adsorber into the Krytox process Title V requirements by a permit modification submittal and NJDEP approval.

# 1.2 Environmental Improvement Pilot Test

The application for the Environmental Improvement Pilot Test (EIPT) in accordance with Title V Permit #65473 was submitted to NJDEP and approved on July 17, 2019. The original submittal addressed the reduction of volatile organic compounds (VOCs); HFPO-DA (also referenced as Gen X in the EIPT) is considered a VOC. At the request of NJDEP, a sampling program was developed to track the results of the EIPT which included evaluation of HFPO-DA, PFOA and additional PFAS compounds.

The EIPT approved the temporary installation and operation of a pilot-scale carbon adsorption system upstream of the existing packed scrubber CD1703 (SB-163) to evaluate the performance of the carbon adsorption system in reducing the total HFPO-DA, PFOA and other PFAS from the Krytox batch process unit: BP1700, OS1, ST1 in J-26 building. The approved EIPT application is included in Appendix A.

The following summarizes the sampling, analytical and reporting conditions that were required per the approved EIPT:

- Monitored by periodic sampling both upstream and downstream of the pilot scale carbon adsorption system during steady state conditions.
- The permittee shall follow the sampling frequencies specified in the relevant Analytical Methods selected for the EIPT.
- Samples are to be collected and analyzed for total GenX (HFPO-DA), perfluorooctanoic acid (PFOA) and all per- and polyfluoroalkyl (PFAS) substances that can be detected, using current EPA documented methods and analytical procedures, or other equivalent analytical methods.
- The facility will follow the sampling plan and analytical methods specified in items 1 and 2 of their email dated July 11, 2019.
- Submit a comprehensive report that includes the following:
  - i) Objectives of the test;
  - ii) Conclusions of the test;
  - iii) Company that performed the test;
  - iv) EPA or other equivalent methods and procedures used to collect samples;
  - v) EPA or other equivalent methods and procedures used to analyze the samples;
  - vi) All the analytical results;
  - vii) Process operating conditions during the test;
  - viii)Raw data collected during the test, and
  - ix) All relevant calculations.

#### 1.3 Results of the EIPT

As detailed in this report, the addition of a carbon adsorption system was effective in reducing HFPO-DA and other PFAS emissions. Concentrations in the vent line show a greater than 99% removal from the process vent. This report presents the data and calculations collected to date per conditions of the EIPT and the sampling plan provided in Appendix B.

Please note that the time to receive analytical results from external laboratories has increased and currently have a six to eight week turnaround time. Air sampling results for October and November are not included in this report but will be forwarded to NJDEP as soon as they are received.

# 2.0 Installation of the Carbon Adsorption System

The carbon adsorption system (AD-1) was installed in-line with the process piping that vents to the existing scrubber, CD1703 (SB-163) as described in Figure 1. There is no new emission point, as all air emissions were still directed through the permitted control device. The Krytox Process Block Diagram is shown in Figure 2. This block diagram shows the arrangement of AD-1 with respect to the building processes. All building vents (dashed lines) flow through existing vent manifolds to AD-1. The outlet of AD-1 is then directed through the existing control device (SB-163) before conveyance to air. All liquid waste from the building and scrubbers are directed through waste water conveyances to the site waste water treatment plant, identified in Figure 2 as solid lines.

# 2.1 Carbon System Details

The carbon unit is a 55-gallon, high density polyethylene drum, with a 4-inch diameter inlet and outlet. The carbon unit contains approximately 180 pounds of virgin grade granular carbon designed for use in gas phase applications. The existing vent line has been modified with valves and flex hoses to allow the drum to be easily changed out. New equipment (piping, flex hoses and valves) are used to direct flow through the drum, or bypass the drum. The bypass is used while changing the spent adsorber. Flow is directed from the existing vent manifold to the existing control device, SB-163. During initial start-up on July 18, 2019, the carbon bed installed as a part of this test caused process back pressure problems that were ultimately corrected on August 9, 2019 by increasing hose and connection sizes. The existing scrubber system, SB-163, is operated by a blower that pulls the vent and drum under slight vacuum in application. The building exhaust operates under ambient temperatures

# 2.2 Carbon Management

Based on data collected to date, AD-1 will be used in line until carbon is spent based on a 10-day run time. Once spent, the drum will be characterized and sent off-site for incineration by an EPA approved waste incineration facility.

# 3.0 Sampling

Process vent (air) and waste water sampling was performed as outlined in the sampling plan submitted to NJDEP via email on July 11, 2019 (see Appendix B). Performance of the carbon bed was evaluated based on a combination of air and water sampling. The water data will be used to supplement the air analyses to provide the most complete view of carbon adsorption effectiveness for this process.

The vent air sampling was designed to validate the effectiveness of the carbon adsorption technology in the Krytox manufacturing process.

Since the outlet of carbon adsorber vents to scrubber SB-163, water samples will be able identify the progression of the mass transfer zone within the carbon bed, such that bed life can be more precisely modeled. The use of water samples versus air samples to determine carbon life is necessary due to the length of time from sample collection to receiving data from external laboratories. Water sampling was performed on the building trench directly downstream of the scrubber. These samples were analyzed at the onsite laboratory. This data was used to determine when the carbon in the adsorber was spent based on increasing trench concentrations.

NOTE: The on-site laboratory is not NJ certified to EPA Method 537 (Modified).

### 3.1 J26 Vent Sampling (Air)

Air samples were collected on the inlet and outlet of the AD-1 (see Figure 1). Air samples were collected monthly on the following dates: August 8, 2019; September 6, 2019; October 4, 2019; and November 14, 2019. Samples were collected using EPA Method 0010 and subsequently sent for analysis of HFPO-DA, PFOA and PFAS substances samples by EPA Methods 8321A and 537 (Modified) at Test America – Knoxville. As of December 17, 2019, only the results of the August and September sampling events have been finalized. The Weston Solutions reports calculate the removal efficiency in terms of percentages. The data and calculations from the August and September sampling events are included in the Weston Solutions reports located in the Appendix C. Air sampling results and the final Weston Solutions reports for October and November are not included in this report but will be forwarded to NJDEP once they are received.

# 3.2 J26 Trench Water Sampling

Directly downstream of AD-1 is a permitted water scrubber, SB-163 under batch process BP1700 in the existing Title V permit. Chemours sampled the water discharge of this scrubber for HFPO-DA daily by taking a sample and submitting it for analysis at the onsite lab. Daily composite samples have been collected from the trench beginning on September 21, 2019. The daily composites were analyzed by the onsite laboratory to provide data to aid in bed breakthrough determination. The onsite laboratory was being used for analysis due to the extended turnaround time for results from external laboratories. The on-site laboratory can provide data in one

week. The on-site laboratory provided data in a timely manner to determine when AD-1 needed to be changed out.

Bi-monthly water samples were sent out to an external certified laboratory for comparison to the onsite laboratory data to ensure consistency. Although detection limits from the on-site laboratory are higher than those provided by the external laboratories, a comparison of the two sets of data showed generally consistency between the two laboratories. The samples collected on August 8 and 23, September 6 and 24, and October 8 and 18 were submitted to Eurofins – Lancaster Labs for analysis by EPA Method 537 (Modified). Both data sets are included in Table 1a (Eurofins) and 1b (Chemours LAS) with full data reports provided in Appendix D.

## 3.3 NJPDES Samples at DSN662

The site operates a waste water treatment plant (WWTP) in accordance with the New Jersey Pollutant Discharge Elimination System (NJPDES) Permit #NJ0005100. Per the NJPDES permit, the site collects weekly samples from compliance sample location DSN662. This sample location represents the treated effluent from the site WWTP prior to being discharged to the Delaware River via permitted Outfall 002. The analytical requirements for DSN662 samples includes a list of eighteen PFAS compounds, including HFPO-DA and PFOA per EPA Method 537(Modified).

As discussed previously, the Krytox scrubber (SB-163) discharges liquid waste, through various conveyances, to the site waste water treatment plant (WWTP). Although AD-1 is in the vapor stream, a reduction in the scrubber liquid stream was expected to occur if AD-1 is effectively removing PFAS compounds from the Krytox emissions before reaching the scrubber. During the EIPT testing, Chemours evaluated the results of the samples from WWTP sample location DSN662. The comparison of weekly samples collected before and after the installation of the carbon bed in Krytox shows a significant reduction in HFPO-DA (see Section 4.3).

## 4.0 Results

# 4.1 J-26 Vent Sampling (Air)

To evaluate effectiveness of the carbon adsorption technology, Weston Solutions collected field measurements on the inlet and outlet of AD-1. The field measurements and associated analytical concentrations were then used to calculate a percent removal for each constituent. The data and reduction efficiencies are shown in Table 3a and 3b.

The data shows AD-1 was effective at reducing PFOA and HFPO-DA emissions by 99.9% for both sample events. Other PFAS compounds have also been reduced. Please note that a removal efficiency of "NA" means that the compounds were not detected in the inlet or outlet samples and therefore a removal efficiency could not be determined. A complete summary of data calculations can be found in Appendix C (Weston Solutions Emission Test Reports).

### 4.2 J-26 Trench Water Sampling

To determine bed life of the carbon, concentrations of HFPO-DA in the trench water were plotted along with the changeouts of AD-1 (see Figure 3). From the data, it was determined that the carbon bed life ranged from 11 to 27 days. The range between AD-1 changeouts is highly dependent on the process conditions. There was one period when AD-1 lasted for 4 days (September 14, 2019), due to the buildup of liquid which caused a high differential pressure in the vent line. Operations changed AD-1 as the effect of excess liquid in the vent line on AD-1 was uncertain. This occurrence is not representative of normal operations and was not included in the evaluation of the bed life.

During the EIPT, the delay in receipt of analysis from external laboratories is prohibitive to using analytical results to determine bed breakthrough. The delay between vapor phase sample collection per EPA method 0010 and the receipt of analysis by a certified lab per EPA Methods 8321A and 537 (Modified) was approximately 2 months. Liquid samples taken from the trench in building J-26 sent to qualified laboratories took several weeks to return results. Therefore, based on the data to date, Chemours plans to take a conservative approach to replace the beds every 10 days. This time frame will be re-evaluated as additional data is collected and evaluated.

# 4.3 NJPDES Sampling at DSN662

The weekly samples results collected from NJPDES sample location DSN662 are provided in Appendix E. Figure 4 shows the reduction of HFPO at sample location DSN662 after AD-1 was placed online. The minimum, maximum and average concentrations for the eighteen PFAS compounds collected at sample location DSN662 before and after the installation are provided on Table 2. This comparison of the before and after results shows a reduction of approximately 80% for HFPO-DA concentrations providing further evidence that AD-1 is effectively reducing HFPO-DA emissions at the site.

# 5.0 Conclusions

The results of the EIPT have demonstrated the effectiveness of the inline carbon adsorption system (AD-1) in reducing PFAS emissions. AD-1 was shown to be over 99% efficient in reducing the total HFPO- DA and PFOA from the Krytox process vent. Additional PFAS compounds also showed reduced emissions from the process vent. AD-1 also reduced HFPO- DA emissions by approximately 80% from waste water treatment plant effluent.

Chemours is proposing to continue the operation of the AD-1. A permit modification will be developed and submitted to NJDEP to add the system to the Title V permit for batch process unit: BP1700, OS1, ST1 in building J-26.

# **Tables**

# Table 1a J26 Trench Water Data Eurofins - LL Data Krytox J-26 EIPT Report Chemours Chambers Works

		Pre Treatment	Post Treatme	ent —			
Analyte	Units	8/8/2019	8/23/2019	9/6/2019	9/24/2019	10/8/2019	10/18/2019
HFPO-DA	ppt	2400000	360000	6600	2100	1300	8400
Perfluorooctanoic acid	ppt	<120	44	36	35	32	64
Perfluoropentanoic acid	ppt	220 J	88	53	83	54	1200
Perfluorohexanoic acid	ppt	180 J	87	64	67	57	320
Perfluorodecanoic acid	ppt	<120	4.1	4.2	4.5	4.0	14
Perfluoroheptanoic acid	ppt	<120	31	21	18	14	100
Perfluorononanoic acid	ppt	<120	8.3	7.6	5.3	5.5	21
Perfluorooctanesulfonic acid	ppt	<120	5.0	5.3	3.4	3.9	2.2
Perfluorobutanesulfonic acid	ppt	<120	5.2	5.7	6.5	11	3.7
Perfluorobutanoic acid	ppt	53000	84	120	100	69	1400
6:2-Fluorotelomersulfonic acid	ppt	<500	27	140	90	320	48
Perfluorohexanesulfonic acid	ppt	<120	<1.8	<1.9	<1.9	2.0	2.1
Perfluorododecanoic acid	ppt	<120	<1.8	<1.9	2.1	<1.9	5.0
Perfluorotridecanoic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	6.4
Perfluoroundecanoic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	8.4
Perfluorodecanesulfonic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
Perfluorododecanesulfonic acid	ppt	<120	<2.7	<2.8	<2.9	<2.9	<3.1
Perfluoroheptanesulfonic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
Perfluorohexadecanoic acid	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
Perfluorononanesulfonic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
Perfluorooctadecanoic acid	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
Perfluorooctanesulfonamide	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
Perfluorotetradecanoic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
Perfluoropentanesulfonate	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
4:2-Fluorotelomersulfonic acid	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
8:2-Fluorotelomersulfonic acid	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
10:2Fluorotelomersulfonic acid	ppt	<250	<4.6	<4.7	<4.8	<4.8	<5.1
NEtFOSAA	ppt	<120	<2.7	<2.8	<2.9	<2.9	<3.1
NEtPFOSA	ppt	<250	<4.6	<4.7	<4.8	<4.8	<5.1
NEtPFOSAE	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
NMeFOSAA	ppt	<150	<1.8	<1.9	<1.9	<1.9	<2.0
NMePFOSA	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
NMePFOSAE	ppt	<250	<2.7	<2.8	<2.9	<2.9	<3.1
9CI-PF3ONS	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
11Cl-PF3OUdS	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
DONA	ppt	<120	<1.8	<1.9	<1.9	<1.9	<2.0
		Pre Treatment	Post Treatme	ent —			

Notes:

Samples were analyzed by Eurofins - Lancaster Labs Samples were analyzed using Method 537 (Modified) J = Estimated Value

# Table 1b J26 Trench Water Data Onsite LAS Data Krytox J-26 EIPT Report Chemours Chambers Works

Analyte	7/10/19	7/18/19	7/19/19	7/20/19	7/22/19	7/24/19	7/26/19	7/27/19	8/2/19	8/3/19	8/4/19	8/6/19
HFPO DA	6.1	30.2	8.808	199	17.2	21.7	26.6	15.2	6.6	2.9	2	13
Analyte	8/6/19	8/7/19	8/8/19	8/9/19	8/10/19	8/11/19	8/12/19	8/13/19	8/14/19	8/15/19	8/20/19	8/20/19
HFPO DA	83.9	317.5	581.4	10	2	15.4	16.3	34.6	80.6	68	14.3	20.6
Analyte	8/21/19	8/22/19	8/27/19	8/28/19	8/29/19	9/2/19	9/3/19	9/4/19	9/5/19	9/9/19	9/10/19	9/11/19
HFPO DA	4.5	71.1	7.6	5.7	2.3	10.9	13.3	4.1	4.4	34.1	10	485.6
Analyte	9/11/19	9/14/19	9/15/19	9/17/19	9/18/19	9/19/19	9/24/19	9/30/19	10/1/19	10/2/19	10/3/19	10/4/19
HFPO DA	668.7	804.1	6.2	48.8	17.7	7	4.3	5.4	2.0	2.0	2.0	2.0
Analyte	10/5/19	10/7/19	10/8/19	10/9/19	10/10/19	10/11/19	10/14/19	10/15/19	10/16/19	10/17/19	10/18/19	10/21/19
HFPO DA	1.0	10.8	16.1	101.0	291.4	17.5	34.2	30.5	38.0	86.4	4.1	10.4
Analyte	10/22/19	10/23/19	10/24/19	10/25/19	10/28/19	10/29/19	10/30/19	10/31/19	11/1/19	11/4/19	11/5/19	11/6/19
HFPO DA	8.0	60.4	13.2	48.5	50	16.9	180.2	67.8	9.7	8.4	41.9	10.1
Analyte	11/7/19	11/8/19	11/11/19	11/12/19	11/13/19	11/14/19	11/15/19	11/18/19	11/19/19	11/20/19	11/21/19	11/22/19
HFPO DA	63	10.9	13.3	15.8	23.4	13.6	45	2	175.1	2.3	4.7	12.8
										·		

Analyte	11/25/19	11/26/19	11/27/19	11/28/19	11/29/19
HFPO DA	56.5	48.8	19	63.1	9.4

Notes:

= Carbon bed changeout
Samples are analyzed by Chemours LAS (Onsite)

All results are in ppb

Table 2
Summary of NJPDES Water Samples at DSN662
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	Ju	ly 2019 - October 20	19	Ju	ıly 2015 - June 20	19	
Analyte	(after ir	stallation of Krytox carbo	on beds)	(before installation of Krytox carbon beds)			
	Average <sup>1</sup>	Min	Max	Average	Min	Max	
Perfluoroundecanoic acid (PFUnA)	0.06	0.03	0.11	0.06	0.02	0.15	
Perfluorotridecanoic acid (PFTriA) <sup>2</sup>	0.02	0.00	0.13	0.02	0.00	0.13	
Perfluorotetradecanoic acid (PFTeA)	0.01	0.00	0.03	0.01	0.00	0.06	
Perfluoropentanoic acid (PFPeA)	3.65	2.80	5.50	3.84	2.10	12.00	
Perfluorooctanoic acid (PFOA)	3.96	2.80	5.50	4.11	1.90	11.00	
Perfluorooctanesulfonic acid (PFOS) <sup>2</sup>	0.02	0.01	0.05	0.04	0.01	1.60	
Perfluorooctanesulfonamide (PFOSA) <sup>2</sup>	0.01	0.00	0.03	0.01	0.00	0.04	
Perfluorononanoic acid (PFNA)	0.29	0.22	0.39	0.31	0.18	0.50	
Perfluorohexanoic acid (PFHxA)	24.31	13.00	40.00	23.29	10.00	45.00	
Perfluorohexanesulfonic acid (PFHxS) <sup>2</sup>	0.01	0.01	0.02	0.01	0.00	0.06	
Perfluoroheptanoic acid (PFHpA)	2.96	1.70	6.60	4.34	1.50	26.00	
Perfluorododecanoic acid (PFDoA) <sup>2</sup>	0.06	0.03	0.09	0.06	0.01	0.14	
Perfluorodecanoic acid (PFDA)	0.55	0.30	0.96	0.56	0.32	1.50	
Perfluorobutanoic acid (PFBA)	4.88	3.00	8.60	5.17	2.50	11.00	
Perfluorobutanesulfonic acid (PFBS)	0.05	0.04	0.07	0.07	0.03	0.29	
HFPO-DA	2.30	0.82	4.00	12.01	4.70	34.00	

% Change Average HFPO-DA

-80.8%

<sup>&</sup>lt;sup>1</sup> For comounds found below the detction limit, the detection limt was used to calculate averages

<sup>&</sup>lt;sup>2</sup> These compunds were found below detection limit for all or majority of samples; the dtection limit was used for statistical analysis purposes (see Appendix E

# Table 3a Weston Analytical Sampling Results and Carbon Efficiency August 2019 Krytox J-26 EIPT Report Chemours Chambers Works

Target Compound	Inlet		Ou	Removal Efficiency	
	g/sec	lb/hr	g/sec	lb/hr	%
Perfluorobutanoic acid (PFBA)	4.24E-05	3.37E-04	7.03E-08	5.59E-07	99.83
Perfluoropentanoic acid (PFPeA)	8.22E-08	6.53E-07	7.07E-11	5.62E-10	99.91
Perfluorohexanoic acid (PFHxA)	<2.18E-08	<1.69E-07	1.24E-10	9.88E-10	99.42*
Perfluoroheptanoic acid (PFHpA)	2.86E-10	2.27E-09	1041E-10	1.12E-09	50.67
Perfluorooctanoic acid (PFOA)	1.44E-07	1.15E-06	4.89E-11	3.88E-10	99.97
Perfluorononanoic acid (PFNA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorodecanoic acid (PFDA)	<2.18E-08	<1.69E-07	2.54E-11	2.02E-10	99.88*
Perfluoroundecanoic acid (PFUnA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorododecanoic acid (PFDoA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorotridecanoic acid (PFTriA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorotetradecanoic acid (PFTeA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorobutanesulfonic acid (PFBS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluoropentanesculfonic acid (PFPeS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorohexanesulfonic acid (PFHxS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluoroheptanesulfonic acid (PFHpS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorooctanesulfonic acid (PFOS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorononanesulfonic acid (PFNS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorodecanesulfonic acid (PFDS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorooctanesulfonamide (FOSA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
N-methylperfluorooctanesulfonamidoaetic acid	2 105 00	.1. COT: 0.7	2 125 10	4 COT 00	NT A
(NMeFOSAA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
N-ethylperfluorooctanesulfonamidoacetic acid	2 105 00	1.600.05	2.125.10	1 (07 00	NT A
(NEtFOSAA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
4:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
6:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
8:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
HFPO Dimer Acid	9.65E-04	7.44E-03	8.04E-07	6.38E-06	99.91

Notes:

NA = Removal efficiency was not calculated because the carbon drum inlet and carbon drum outlet concentrations were all non-detects. See Weston Solutions sampling reports (Appendix C) for calculations

<sup>\*</sup>Removal efficiency calculated using method detection limit values for carbon drum inlet emission concentration rates.

# Table 3b Weston Analytical Sampling Results and Carbon Efficiency September 2019 Krytox J-26 EIPT Report Chemours Chambers Works

Target Compound	Ir	ılet	Oı	Removal Efficiency	
	g/sec	lb/hr	g/sec	lb/hr	%
Perfluorobutanoic acid (PFBA)	1.345E-04	1.068E-03	8.72E-06	6.926E-05	93.52
Perfluoropentanoic acid (PFPeA)	3.975E-06	3.157E-05	8.65E-12	6.871E-11	>99.99
Perfluorohexanoic acid (PFHxA)	4.99E-09	3.966E-08	2.49E-12	1.978E-11	99.95
Perfluoroheptanoic acid (PFHpA)	2.486E-10	1.975E-09	<1.180E-9	<9.372E-09	NA**
Perfluorooctanoic acid (PFOA)	<4.307E-09	<3.421E-08	1.317E-12	1.046E-11	99.97*
Perfluorononanoic acid (PFNA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorodecanoic acid (PFDA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoroundecanoic acid (PFUnA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorododecanoic acid (PFDoA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorotridecanoic acid (PFTriA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorotetradecanoic acid (PFTeA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorobutanesulfonic acid (PFBS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoropentanesculfonic acid (PFPeS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorohexanesulfonic acid (PFHxS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoroheptanesulfonic acid (PFHpS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorooctanesulfonic acid (PFOS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorononanesulfonic acid (PFNS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorodecanesulfonic acid (PFDS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorooctanesulfonamide (FOSA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
4:2 FTS	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
6:2 FTS	1.625E-08	1.290E-08	3.205E-09	2.546E-08	80.27
8:2 FTS	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
HFPO Dimer Acid	5.358E-04	4.256E-03	1.319E-7	1.048E-06	99.98

#### Notes:

NA = Removal efficiency was not calculated because the carbon drum inlet and carbon drum outlet concentrations were all non-detects.

See Weston Solutions sampling reports (Appendix C) for calculations

<sup>\*</sup>Removal efficiency calculated using method detection limit values for carbon drum inlet emission concentration rates.

<sup>\*\*</sup>Removal efficiency was not calculated because the carbon drum outlet detection limit was higher than the detected value at the carbon drum inlet.

# **Figures**

Figure 1
Carbon Adsorption System (AD-1) Schematic
Krytox J-26 EIPT Report
Chemours Chambers Works

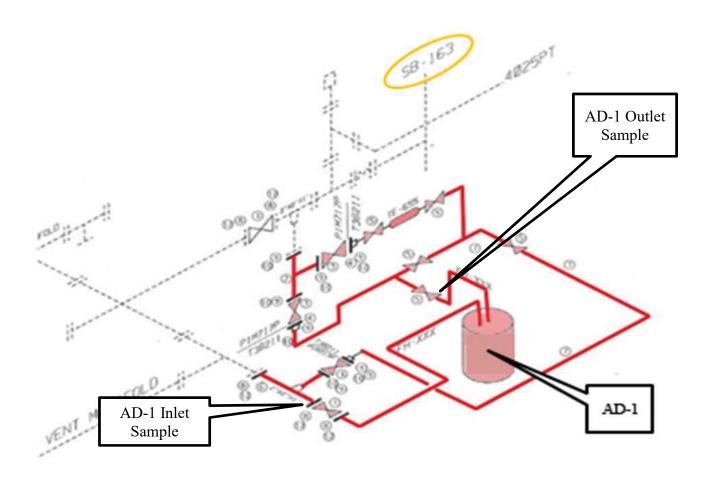


Figure 2

Krytox™ Batch Process (BP1700) Block Diagram

Krytox J-26 EIPT Report

Chemours Chambers Works

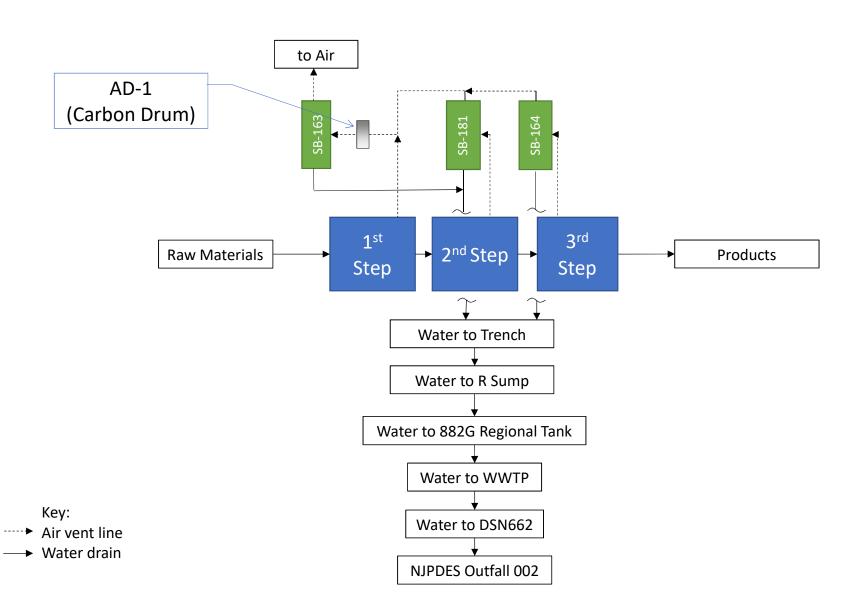


Figure 3
J26 Trench Concentrations (Water Samples)
Krytox J-26 EIPT Report
Chemours Chambers Works

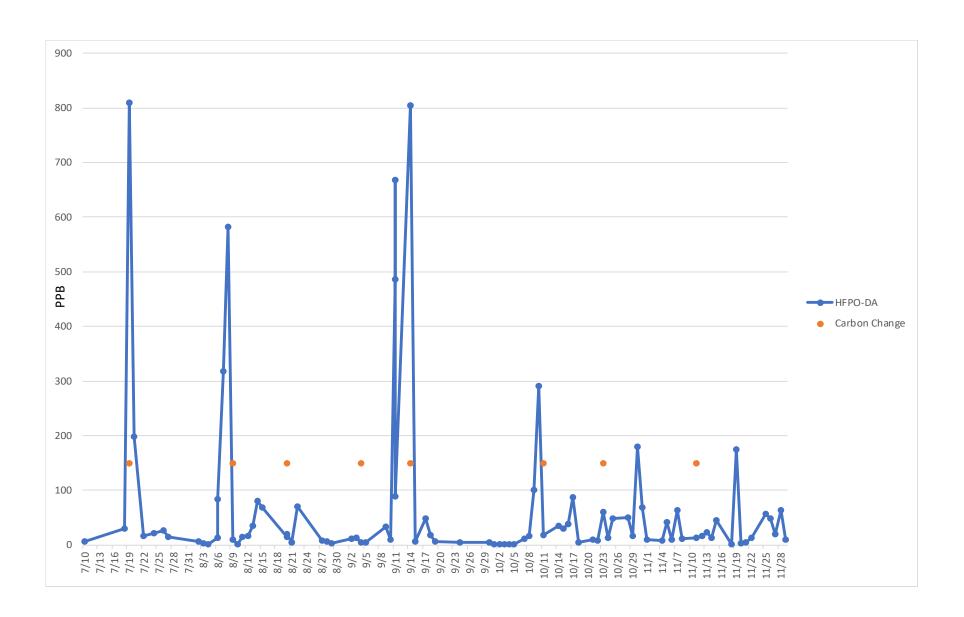
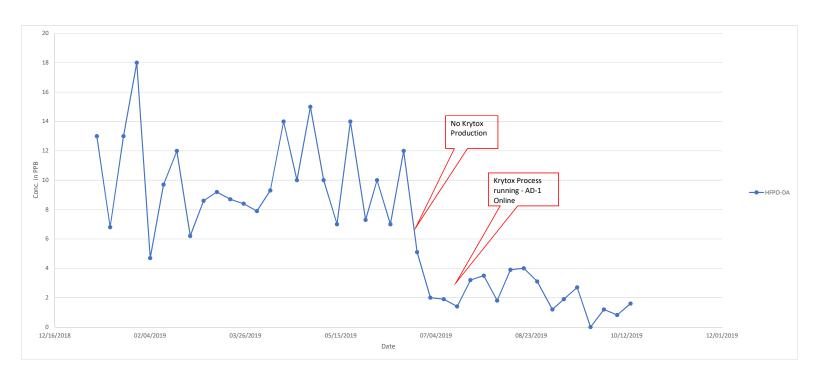


Figure 4
HFPO-DA Water Concentrations at DSN662
Krytox J-26 EIPT Report
Chemours Chambers Works



#### Note:

Baseline data for HFPO-DA was not included to allow better detail. Base line concentrations in 2018 ranged from 131ppb to 278ppb Samples collected by AECOM

Samples from 1/7/19 through 8/19/19 were analyzed by EPA Method 537 Modified)

Samples from 8/26/19 through 10/14/19 were analyzed by EPA Method 537 rev.1.1 (Modified)

Samples are collected from DSN662

# **Appendices**

# Appendix A - Environmental Improvement Pilot Test Application



The Chemours Company Fluoroproducts

67 Canal Road, P. O. Box 9001 Chambers Works - Pedersen Building Deepwater, NJ 08023

June 6, 2019

via NJDEP Online

Mr. Mubin Kathrada
New Jersey Department of Environmental Protection
Bureau of Stationary Sources – Operating Permits
401 East State Street – 2<sup>nd</sup> Floor
P.O Box 420 Mail Code 401-02
Trenton, NJ 08625-0420

Re:

Chemours Chambers Works - The Chemours Company FC, LLC Environmental Improvement Pilot Test (EIPT) Application Batch Process BP1700, OS1, ST1 – Krytox Product Manufacturing Program Interest No. 65473

Dear Mr. Kathrada:

Chemours Company FC, LLC (Chemours) hereby submits this Environmental Improvement Pilot Test (EIPT) application pursuant to N.J.A.C. 7:27-22.23 for the above referenced Title V permit for its Deepwater Chemical Manufacturing facility.

The purpose of this application is to evaluate the performance of a carbon adsorption system in reducing the total volatile organic compound (VOC) emissions from Krytox batch process unit: BP1700, OS1, ST1. While the existing batch process emission unit already complies with the State of the Art (SOTA) requirements for organic compounds, the intent of this test is to determine if additional carbon canisters can help further reduce the total VOC emissions from the Krytox batch process unit in J-26 building.

The carbon adsorption system will be installed in-line with the process piping that vents to the existing scrubber (SB-163) as described in attachment 1. There will be no new emission point as all air emission will still be directed through the permitted control device.

The proposed application will not cause the emission of a new air contaminant not currently specified in the permit. Unit installation date is scheduled during the week of June 24<sup>th</sup> and start-up is planned around the first or second week of July 2019.

Chemours appreciates your timely review of the information provided. If you have any questions about this permit application, please call me at (856) 540-2012 or Kathryn Cuento at (856)540-2194.

Sincerely

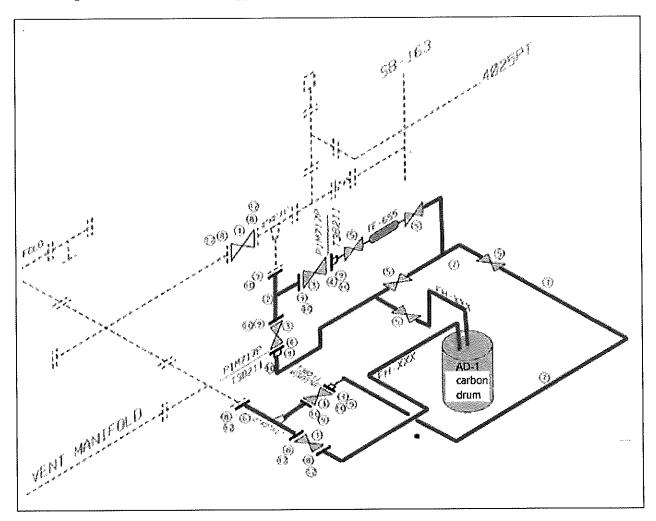
Scott/T. Northey

Site Environmental Manager

#### **ATTACHMENT 1**

## DESCRIPTION OF THE PROPOSED ENVIRONMENTAL IMPROVEMENT PILOT TEST

The installation is pictured below, in which solid red lines represent new equipment, while dashed lines represent existing. The adsorber is AD-1 "Carbon Drum". TE-655 represent the sample location by which air samples can be drawn from the inlet or outlet of the adsorber. All other equipment represents piping, flex hoses and valves used to provide flow through the drum, or bypass the drum. The bypass is used while changing spent adsorbers. Flow is directed from the existing vent manifold (bottom left) to the existing control device, SB-163 (upper right).



#### Sampling:

Sampling will be conducted on a routine basis on both the inlet and outlet of the carbon bed. The intent of the sampling is to determine the effectiveness of the technology and determine the effectiveness over time in service of the bed.

#### Carbon Adsorber Details:

The carbon adsorber site technical identification is AD-1, in building J-26. The adsorber units will be used one time, until breakthrough has been determined via sampling. Then, once spent, the drum will be sent offsite for incineration. There is no intent to reuse drums or to attempt to reclaim the spent carbon. The following brochure has information regarding the Calgon Ventsorb technology that will be used in the trial. The Ventsorb unit itself is a 55-gallon, high density polyethylene drum, with a 4" diameter FNPT inlet and outlet (dimensions available in brochure attached). There is approximately 180 lbs of granular virgin BPL 4X10 virgin grade, vapor phase carbon in the drum. The existing scrubber system, SB-163 (CD1703), pulls the drum under slight vacuum in application, and the drum will be outside such that it sees ambient temperature.

## **New Jersey Department of Environmental Protection Reason for Application**

#### Permit Being Modified

Number: 0 Permit Class:

Description

The purpose of this application is to evaluate the performance of a carbon adsorption system of Modifications: in reducing the total volatile organic compound (VOC) emissions from Krytox batch process unit: BP1700, OS1, ST1. While the existing batch process emission unit already complies with the State of the Art (SOTA) requirements for organic compounds, the intent of this test is to determine if additional carbon canisters can help further reduce the total VOC emissions from the Krytox batch process unit in J-26 building. The carbon adsorption system will be installed in-line with the process piping that vents to the existing scrubber SB-163 (CD1703). As such, there will be no new emission point as all air emission will still be directed through the permitted control device.

> The proposed application will not cause the emission of a new air contaminant not currently specified in the permit. Unit installation date is scheduled during week of June 24th and start-up is planned around the first or second week of July 2019.

**CHEMOURS CHAMBERS WORKS (65473)** 

Date: 6/7/2019

## New Jersey Department of Environmental Protection Facility Profile (General)

Facility Name (AIMS): CHEMOURS CHAMBERS WORKS

Facility ID (AIMS): 65473

Street 67 CANAL RD

Address: PO BOX 9001

Mailing 67 CANAL RD

Address: PO BOX 9001

DEEPWATER, NJ 08023

DEEPWATER, NJ 08023

State Plane Coordinates: -

X-Coordinate: 317,100

Y-Coordinate: 312,418

Units:

Feet

Datum:

NAD83

Source Org.:

Submittal Document

Source Type:

Other/Unknown

County:

Salem

Location

Along the Delaware River, Just north of the

Description: Delaware Memorial Bridge

Industry:

Primary SIC:

Secondary SIC:

NAICS:

325199

Date: 6/7/2019

# CHEMOURS CHAMBERS WORKS (65473)

Email: KRISTINE.M.WELLMAN@chemours.com

# New Jersey Department of Environmental Protection Facility Profile (General)

Contact Type: Air Permit Information Contact		
Organization: The Chemours Company FC, LLC		Org. Type: Corporation
Name: Kathryn Cuento		<b>NJ EIN:</b> 00465626518
Title: EHS consultant		
Phone: (856) 540-2194 x	Mailing	The Chemours Company FC, LLC
Fax: ( ) - x	Address:	67 Canal Road P.O. Box 9001
Other: ( ) - x		Deepwater, NJ 08023
Type:		
Email: KATHRYN.1.CUENTO@chemours.com		
Contact Type: General Contact		
Organization: The Chemours Company FC, LLC		Org. Type: Corporation
Name: Scott Northey		NJ EIN: 00465626518
Title: EHS manager		
<b>Phone:</b> (856) 540-2012 x	Mailing	The Chemours Company FC, LLC
Fax: ( ) - x	Address:	67 Canal Road P.O. Box 9001
Other: ( ) - x		Deepwater, NJ 08023
Type:		
Email: SCOTT.T,NORTHEY@chemours.com		
Contact Type: Responsible Official		
Organization: The Chemours Company FC, LLC		Org. Type: Corporation
Name: Kristine M. Wellman		NJ EIN: 00465626518
Title: Plant manager		
Phone: (856) 540-2600 x	Mailing	The Chemours Company FC, LLC
<b>Fax:</b> ( ) - x	Address:	67 Canal Road P.O. Box 9001
<b>Other:</b> ( ) - x		Deepwater, NJ 08023
Tyne		

Date: 6/7/2019

# New Jersey Department of Environmental Protection Facility Profile (Permitting)

1. Is this facility classified as a small business by the USEPA?	No
2. Is this facility subject to N.J.A.C. 7:27-22?	Yes
3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22?	No
4. Has a copy of this application been sent to the USEPA?	No
5. If not, has the EPA waived the requirement?	No
6. Are you claiming any portion of this application to be confidential?	No
7. Is the facility an existing major facility?	Yes
8. Have you submitted a netting analysis?	No
9. Are emissions of any pollutant above the SOTA threshold?	No
10. Have you submitted a SOTA analysis?	No
11. If you answered "Yes" to Question 9 and "No" to Question 10, explain why a SOTA analysis was not required	
12. Have you provided, or are you planning to provide air contaminant modeling?	No

#### CHEMOURS CHAMBERS WORKS (65473)

Date: 6/7/2019

### New Jersey Department of Environmental Protection Control Device Inventory

CD NJID	Facility's Designation	Description	CD Type	Install Date	Grand- Fathered	Last Mod. (Since 1968)	CD Set ID
CD1705	AD-1	PC BLDG J-26: BAY I Carbon	Adsorber	7/1/2019	No		CS1700
		canisters					

#### 000000 CD1705 (Adsorber) Print Date: 6/7/2019

Make:	
Manufacturer:	Calgon Carbon
Model:	
Adsorber Type:	Fixed (Non-Regenerative)
Description:	
Maximum Gas Flow Rate to Adsorber (acfm):	
Maximum Temperature of Vapor Stream to Adsorber (°F):	
Minimum Temperature of Vapor Stream to Adsorber (°F):	The state of the s
Minimum Moisture Content of Vapor Stream to Adsorber (%):	
Type of Adsorbant:	Activated carbon
Bed Height:	2.75
Bed Length:	
Bed Width:	1.80
Units:	Feet 💌
Other Bed Dimension:	A CONTROL OF THE PROPERTY OF T
Value:	
Units:	
Minimum Pressure Drop Across Adsorbant (in. H20):	
Maximum Pressure Drop Across Adsorber (in. H20):	
Total Weight of Adsorbant (lbs):	180.0
Total Weight of Adsorbant When Saturated (lbs):	
Maximum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	
Minimum Adsorbant Capacity (lbs Adsorbate/lbs Adsorbant):	The state of the s
Set-up Type:	
Method of Determining Breakthrou	gh (check all that apply):
Continuous Emissions Monitor (CEM):	
Replacement By Weight:	
Periodic Testing:	
Sampling Frequency:	
Sampling Device:	
Other:	
Description:	
Minimum Concentration at Breakthrough (ppmvd):	
Handling Method of Saturated Adsorbant:	Disposed of off-site
Method of Regeneration:	

#### 000000 CD1705 (Adsorber) Print Date: 6/7/2019

Maximum Number of Sources Using this Apparatus as a Control Device (Include Permitted and Non-Permitted Sources):	1
Alternative Method to Demonstrate Control Apparatus is Operating Properly:	
Have you attached data from recent performance testing?	Yes ● No
Have you attached any manufacturer's data or specifications in support of the feasibility and/or effectiveness of this control apparatus?	○ Yes  No
Have you attached a diagram showing the location and/or configuration of this control apparatus?	Yes O No
Comments:	in-line with the process piping venting to SB-163 (CD1703)



# VENTSORB® PE FOR INDUSTRIAL APPLICATIONS

#### Description

VENTSORB PE canisters, containing 180 pounds of activated carbon, are ideal for low-flow treatment applications. These economical adsorption systems control small volume organic contaminants and/or odorous gas emissions from:

- · Storage tank vents
- · Reactor vents
- · API separator vents
- · Sludge thickener tanks at waste treatment plants
- · Chemical plant wastewater holding tanks
- · Laboratory hood exhausts
- Landfills
- · Air-stripper off-gases

The 55-gallon VENTSORB PE canister contains all the elements found in a full-scale adsorption system vessel: activated carbon, inlet connection and distributor, and an outlet connection for the purified air stream.

#### **Features**

VENTSORB PE canisters offer several important features and benefits including:

- Effective treatment to remove a variety of vapor phase organic contaminants and odor-causing compounds
- · All plastic construction for reliable non-corrosive service
- · Continuous treatment at varying flow rates and concentrations
- · Simple installation and operation
- Flexibility to be installed in series or multiple units in parallel
- Supplied with activated carbon selected specifically for the application
- Practical disposal option: pre-approved spent carbon canisters may be returned to Calgon Carbon Corporation for safe carbon reactivation
- Low cost per unit makes carbon treatment economical

#### **Activated Carbon Selection**

The standard VENTSORB PE is provided with Calgon Carbon's bituminous coal-based AP4-60 4 mm pellet activated carbon. Calgon Carbon offers a wide variety of activated carbons for special applications that can be used in the VENTSORB PE. Contact Calgon Carbon for more information on other activated carbon products.

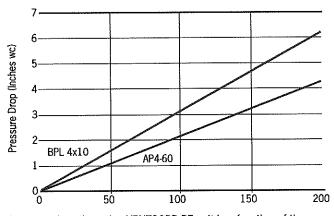
#### Typical Carbon Products Available

UDD	Deadhad Crada Vanor Phase Carbon			
VPR	Reactivated Grade Vapor Phase Carbon			
AP4-60	Virgin Grade Vapor Phase Carbon-4 mm Pellet			
BPL	4X10 Virgin Grade Vapor Phase Carbon–Granular			
	4X10 Mesh			

#### **Materials of Construction**

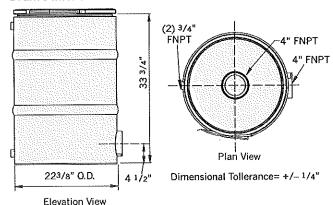
Canister	Open top 55 gallon plastic drum		
	125 mil thick (min) HMW-high		
	density polyethylene		
Cover	175 mil thick HMW-HDPE with closure		
	and polyurethane gasket		
Inlet/Outlet Fittings	4" diameter FNPT polyethylene coupling		
Internal Distributor	High density polyethylene		
Inlet/Outlet Shipping Plugs	PVC, threaded		
Weight Empty	24 lbs.		
Carbon Load	180 lbs.		
Operating Temperature	120° F (max)		
Operating Pressure	1.0 PSIG (max)		

#### Pressure Drop



Pressure drop through a VENTSORB PE unit is a function of the process air flow as shown in the graph. A VENTSORB PE canister can handle up to 200 cfm at a pressure drop of less than 6 inches of water column. If a higher flow or lower pressure drop is needed, multiple canisters may be installed in parallel operation.

#### **Drum Dimensions**



#### Installation

VENTSORB PE canisters are shipped ready for installation. Each canister is self-supporting and should be placed on a level, accessible area as near as possible to the emission source. Installation is simple, requiring just a flexible hose or pipe to connect the source to the 4" FNPT bottom inlet of the canister.

If the VENTSORB PE will be vented directly to outside air; a U-shaped outlet pipe or rain hat (such as a pipe tee) is recommended to prevent precipitation from entering the unit.

VENTSORB PE canisters operate from a continuous flow across the carbon. The flow can be produced by a blower or by using the positive pressure inside the tank or process vessel. In many cases, the pressure or surge of pressure within the tank or vessel is sufficient to overcome the pressure drop across the canister, thus eliminating the need for a blower. Please consult the pressure drop data in this bulletin for more information.

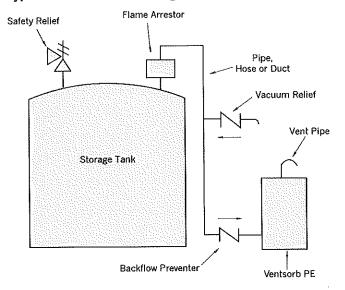
Maximum recommended air flow through a VENTSORB PE is 200 cfm. If higher flows are encountered, plant operators should install two or more canisters in parallel configuration. When VENTSORB PE canisters are used to control vapors from organic solvent storage tanks, (see drawing of typical installation) the following precautions are recommended:

#### Storage Tank Installation

- A safety relief valve must be provided. This protects the storage tank should the VENTSORB PE become plugged or blocked in any fashion. Such a vent would open in an emergency situation, thereby relieving pressure.
- Under appropriate conditions, a flame arrestor and/or backflow preventor must be installed as shown in the storage tank installation drawing below. This prevents backflow of air through the VENTSORB PE when the storage tank is empty.
- Pre-wetting the carbon helps dissipate excessive heat that may be caused by high organic compound concentrations (>0.5 to 1.0 Vol.%).

If VENTSORB PE canisters are used to control organic emissions from air-strippers or other high moisture content air streams, Calgon Carbon Corporation recommends that humidity in the air stream be reduced to under 50 percent. Lower humidity optimizes adsorptive capacity of the carbon. In addition, for similar applications that generate a condensate, Calgon Carbon Corporation recommends installation of a drain on the inlet piping.

#### Typical Installation at a Storage Tank



#### **Carbon Life Estimate**

The table below lists the theoretical adsorption capacities for several compounds. The adsorption capacity for non-polar organics increases with the boiling point, molecular weight, and concentration of the air contaminant. Estimate the life of a VENTSORB PE canister for other organic compounds by matching them with compounds of similar boiling points and molecular weight in this table. Low molecular weight (less than 50) and/or highly polar compounds such as formaldehyde, methane, ethanol, etc. will not be readily adsorbed at low concentrations.

#### Theoretical VENTSORB PE Capacities\*

Pounds Adsorbed per VENTSORB PE at Given Concentration of Contaminant\*\*

	Approximate Boiling Point (°C)	Molecular Weight	Lbs. @ 10 ppm	Lbs. @ 100 ppm	Lbs. @ 1,000 ppm
Acrylonitrile	77.3	53.1	8	15	26
Benzene	80.1	78.1	14	22	34
n-Butane	-0.5	58.1	7	10	16
Carbon Tetrachloride	76,8	153.8	45	60	78
Dichloroethylene -1,1	31.7	97.0	16	25	38
Methylene Chloride	40.2	84.9	4	9	19
Freon 114	3.8	170.9	16	26	40
n-Hexane	68.7	86.2	21	27	34
Styrene	145.2	104.1	47	56	65
Toluene	110.6	92.1	35	43	51
Trichloroethylene	87.2	131.4	32	47	67

<sup>\*</sup>Theoretical capacity based on 70° F, 1 atm pressure, less than 50 percent humidity, and 180 pounds of carbon using isotherm data for AP4-60 carbon.

#### Return of VENTSORB PE

Arrangements should be made at the time of purchase to return canisters containing spent carbon. Calgon Carbon Corporation can provide instructions on how to sample the spent carbon and arrange for carbon acceptance testing. The spent carbon is reactivated by Calgon Carbon Corporation and all of the contaminants are thermally destroyed. Calgon Carbon Corporation will not accept VENTSORB PE for landfill, incineration, or other means of disposal.

VENTSORB PE cannot be returned to the company unless the carbon acceptance procedure has been completed, an acceptance number provided, and the return labels (included with the unit at the time of purchase) are attached. VENTSORB® PE must be drained and inlet/outlet connections must be plugged prior to returning the unit to Calgon Carbon Corporation.

#### Other Air Purification Systems

VENTSORB PE is specifically designed for a variety of small applications. Calgon Carbon Corporation offers a wide range of carbon adsorption systems and services for a range of flow rates and carbon usages to meet specific applications.

#### **Safety Considerations**

Continuous process temperatures above 120° F are to be avoided. High concentrations of Hydrogen Sulfide and VOC's could cause excessive heat build—up. Care must be exercised in the design of the treatment system for flammable gases or reactive vapors.

The use of a pressure safety relief, flame arrestor and/or backflow device is recommended for installations venting storage tanks. VENTSORB PE units with Centaur HSV carbon that are washed with

water produce a dilute acid that must be handled appropriately. Slight pressure may accumulate in a sealed VENTSORB PE canister due to extreme changes in ambient temperature conditions. Use care when removing the plastic shipping plugs.

Activated carbon may cause an exothermic reaction in the presence of oxygen bearing compounds, such as peroxides, ketones, organic acids, aldehydes and also organic sulphur compounds. The introduction of flammable compounds into the unit while an exothermic reaction is occurring will ignite the gas stream causing fire and explosion. Flooding the unit with water will extinguish the flames but generate steam and pressure. USE CAUTION!

Heat of adsorption can lead to severe temperature excursions at high concentrations of organic compounds. Heating may be controlled by diluting the inlet air, time weighting the inlet concentration to allow heat to dissipate, or pre-wetting the carbon.

If you are unsure of the reaction of an organic compound on activated carbon or have other questions, please contact a Calgon Carbon Corporation Application Engineer or Sales Representative.

#### Safe Handling and Storage of Wet Carbon

Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low oxygen spaces should be followed, including all applicable federal and state requirements.

<sup>\*\*</sup>This information has been generated using Calgon Carbon's proprietary predictive model. There is no expressed or implied warranty regarding the suitability or applicability of results.

### Appendix B - Environmental Improvement Pilot Test Sampling Plan

### Cuento, Kathryn

From: Kathrada, Mubinul < Mubinul.Kathrada@dep.nj.gov>

**Sent:** Tuesday, July 16, 2019 8:55 AM

**To:** Cuento, Kathryn

Subject:RE: ⚠ Draft CP ID67473 / EIO190001Attachments:EIO190001 Modified 7-12-19.pdf

External email. Confirm links and attachments before opening.

Hi Kathryn:

Following your comments below, a clarification statement was added to the compliance plan. Please see highlighted entry on attached EIPT draft.

Please let me know of OK with Chemours. I could finalize EIPT today.

**Thanks** 

mubin

From: Cuento, Kathryn <KATHRYN.1.CUENTO@chemours.com>

Sent: Thursday, July 11, 2019 5:42 PM

To: Kathrada, Mubinul < Mubinul. Kathrada@dep.nj.gov>

Cc: Doshi, Yogesh < Yogesh.Doshi@dep.nj.gov>; Northey, Scott < SCOTT.T.NORTHEY@chemours.com>

Subject: [EXTERNAL] RE: /\ Draft CP ID67473 / EIO190001

Hi Mubin,

Thank you for help on this EIPT application!

We reviewed the draft and wanted to clarify the monitoring requirements for ref#1, to avoid confusion with the sampling strategy.

Below is the sampling plan, which we believe is aligned with the stated monitoring requirements.

- 1) We will sample the inlet and outlet of the carbon adsorption unit at an approximate frequency of monthly. Both inlet and outlet samples will be collected using EPA Method 0010 and subsequently sent for analysis for the prescribed species, including GenX, PFOA and PFAS substances. The intent of this sampling will be to validate the effectiveness of the carbon adsorption technology given the chemical matrix inherent in the process. Initial testing will be for full suite of PFAS compounds, but the frequency and scope of analysis of the air samples may be adjusted pending the results of prior samples and after discussion with the Department.
- Directly downstream of the carbon adsorption unit is a permitted water scrubber, SB-163 (CD1703, under batch process BP1700 in the existing Title V permit). Our intent will be to sample the water discharge of this scrubber for HFPO-DA on a daily basis by taking a grab sample and submitting it for analysis on site. As the dimer acid is water soluble, the intent of this sample data is to help identify the progression of the mass transfer zone within the carbon bed, such that bed life can be more precisely modeled. These data points will be used to supplement the air analyses to provide the most complete view of carbon adsorption effectiveness for this process. Initial testing will be for full suite of PFAS compounds, but the frequency and scope of analysis of the water samples may be adjusted pending the results of

prior samples and after discussion with the Department. The intent is that the frequency of water samples will be greater than the frequency of air samples for the duration of the pilot trial.

Thanks, Kathryn

From: Kathrada, Mubinul [mailto:Mubinul.Kathrada@dep.nj.gov]

Sent: Tuesday, July 9, 2019 4:39 PM

To: Cuento, Kathryn < <a href="mailto:KATHRYN.1.CUENTO@chemours.com">KATHRYN.1.CUENTO@chemours.com</a>>

Cc: Doshi, Yogesh < <a href="mailto:Yogesh.Doshi@dep.nj.gov">Yogesh.Doshi@dep.nj.gov</a>>
Subject: ⚠ Draft CP ID67473 / EIO190001

External email. Confirm links and attachments before opening.

Hi Kathryn:

Here is the draft CP for EIO190001.

Thanks for your patience.

#### mubin

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Appendix C - Weston Solutions Air Sampling Reports (August and September 2019)

# BLDG. J-26, CARBON DRUM INLET/OUTLET EMISSIONS TEST REPORT FLUOROMONOMERS MANUFACTURING PROCESS TEST DATE: 8 AUGUST 2019

# THE CHEMOURS COMPANY DEEPWATER, NEW JERSEY

Prepared for:



### THE CHEMOURS COMPANY

67 Canal Road Deepwater, NJ 08023

Prepared by:



### WESTON SOLUTIONS, INC.

1400 Weston Way P.O. Box 2653 West Chester, Pennsylvania 19380

November 2019

W.O. No. 15418.001.005

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### 1. INTRODUCTION

### 1.1 FACILITY AND BACKGROUND INFORMATION

The Chemours Company Chambers Works (Chemours) is located in Deepwater, New Jersey.

Chemours contracted Weston Solutions, Inc. (WESTON) to perform target per- and polyfluoroalkyl substances (PFAS) and HFPO Dimer Acid emission testing on the Bldg. J-26 Carbon Drum Inlet and Carbon Drum Outlet. Testing was performed on 8 August 2019 and generally followed the "Emissions Test Protocol" utilized at other Chemours facilities. This report provides the results from the emission test program.

### 1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the emissions concentrations of PFAS and HFPO Dimer Acid from the Bldg.
   J-26 Carbon Drum Inlet and Carbon Drum Outlet.
- Provide representative emissions data and determine the carbon drum removal efficiency.

#### 1.3 TEST PROGRAM OVERVIEW

Table 1-1 provides a summary of the test locations and the parameters that were measured along with the sampling/analytical procedures that were followed.

Section 2 provides a summary of test results. Section 3 provides a description of the test locations. The sampling and analytical procedures are provided in Section 4. Detailed test results and discussion are provided in Section 5.

Appendix B includes the summary reports for the laboratory analytical results. The full laboratory data packages are provided in electronic format.

Table 1-1
Sampling Plan for Carbon Drum

Sampling Point & Location	Building J-26 Carbon Drum				
Number of Tests:	2 (1 Carbon Drum Inlet, 1 Carbon Drum Outlet)				
Parameters To Be Tested:	PFAS and HFPO Dimer Acid	Carbon Oxygen Dioxide		Water Content	
Sampling or Monitoring Method	EPA M-0010	EPA M3/3A		EPA M4 in conjunction with M-0010 tests	
Sample Extraction/ Analysis Method(s):	LC/MS/MS	N.A	NA		
Sample Size	> 1m <sup>3</sup>	NA	NA	NA	
Total Number of Samples Collected <sup>1</sup>	2	1	1	2	
Reagent Blanks (Solvents, Resins) <sup>1</sup>	1 set	0	0	0	
Field Blank Trains <sup>1</sup>	1 set	0	0	0	
Proof Blanks <sup>1</sup>	1 set	0	0	0	
Trip Blanks <sup>1,2</sup>	1 set	0	0		
Lab Blanks	1 per fraction <sup>3</sup>	0	0	0	
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction <sup>3</sup>	0	0	0	
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction <sup>3</sup>	0	0	0	
Media Blanks	1 set <sup>4</sup>	0	0	0	
Isotope Dilution Internal Standard Spikes	Each sample	0	0	0	
Total No. of Samples	6 <sup>5</sup>	1	1	2	

### Key:

NA = Not applicable.

<sup>&</sup>lt;sup>1</sup> Sample collected in field.

<sup>&</sup>lt;sup>2</sup> Trip blanks include one XAD-2 resin module and one methanol sample per sample shipment.

<sup>&</sup>lt;sup>3</sup> Lab blank and LCS/LCSD includes one set per analytical fraction (front half, back half and condensate).

<sup>&</sup>lt;sup>4</sup> One set of media blank archived at laboratory at media preparation.

<sup>&</sup>lt;sup>5</sup> Actual number of samples collected in field.

### 2. SUMMARY OF TEST RESULTS

One test each was performed on the Carbon Drum Inlet and Carbon Drum Outlet. Table 2-1 provides a summary of the PFAS and HFPO Dimer Acid emission test results. Detailed test results summaries are provided in Section 5.

It is important to note that emphasis is being placed on the characterization of the emissions based on the stack test results. Research conducted in developing the protocol for stack testing HFPO Dimer Acid Fluoride (CAS No. 2062-98-8), HFPO Dimer Acid Ammonium Salt and HFPO Dimer Acid (CAS No. 13252-13-6) realized that the resulting testing, including collection of the air samples and extraction of the various fraction of the sampling train, would result in all three compounds being expressed as simply the HFPO Dimer Acid. However, it should be understood that the total HFPO Dimer Acid results provided on Table 2-1 and in this report may include a percentage of each of the three compounds.

Table 2-1 Summary of Test Results

Target Compound	Inlet		Outlet		Removal Efficiency
	g/sec	lb/hr	g/sec	lb/hr	%
Perfluorobutanoic acid (PFBA)	4.24E-05	3.37E-04	7.03E-08	5.59E-07	99.83
Perfluoropentanoic acid (PFPeA)	8.22E-08	6.53E-07	7.07E-11	5.62E-10	99.91
Perfluorohexanoic acid (PFHxA)	<2.18E-08	<1.69E-07	1.24E-10	9.88E-10	99.42*
Perfluoroheptanoic acid (PFHpA)	2.86E-10	2.27E-09	1041E-10	1.12E-09	50.67
Perfluorooctanoic acid (PFOA)	1.44E-07	1.15E-06	4.89E-11	3.88E-10	99.97
Perfluorononanoic acid (PFNA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorodecanoic acid (PFDA)	<2.18E-08	<1.69E-07	2.54E-11	2.02E-10	99.88*
Perfluoroundecanoic acid (PFUnA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorododecanoic acid (PFDoA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorotridecanoic acid (PFTriA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorotetradecanoic acid (PFTeA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorobutanesulfonic acid (PFBS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluoropentanesculfonic acid	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
(PFPeS)					
Perfluorohexanesulfonic acid (PFHxS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluoroheptanesulfonic acid (PFHpS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorooctanesulfonic acid (PFOS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorononanesulfonic acid (PFNS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorodecanesulfonic acid (PFDS)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
Perfluorooctanesulfonamide (FOSA)	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
N-	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
methylperfluorooctanesulfonamidoaetic					
acid (NMeFOSAA)					
N-	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
ethylperfluorooctanesulfonamidoacetic					
acid (NEtFOSAA)					
4:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
6:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
8:2 FTS	<2.18E-08	<1.69E-07	<2.13E-10	<1.69E-09	NA
HFPO Dimer Acid	9.65E-04	7.44E-03	8.04E-07	6.38E-06	99.91

<sup>\*</sup>Removal efficiency calculated using method detection limit values for carbon drum inlet emission concentration rates.

NA Removal efficiency was not calculated because the carbon drum inlet and carbon drum outlet concentrations were all non-detects.

### 3. DESCRIPTION OF TEST LOCATIONS

### 3.1 CARBON DRUM INLET AND OUTLET

The inlet and outlet of the 55 gallon carbon drum are connected to the process streams by an SS braided flexible line. The sample locations are at the T-connections where the flexible lines and the process stream inlet and outlet pipes join. Each T-connection for sampling was made with a leak-tight fitting on the end of the tubing used as a sample probe for the sample train. See Figure 3-1 for Carbon Drum Inlet and Carbon Drum Outlet sample locations.

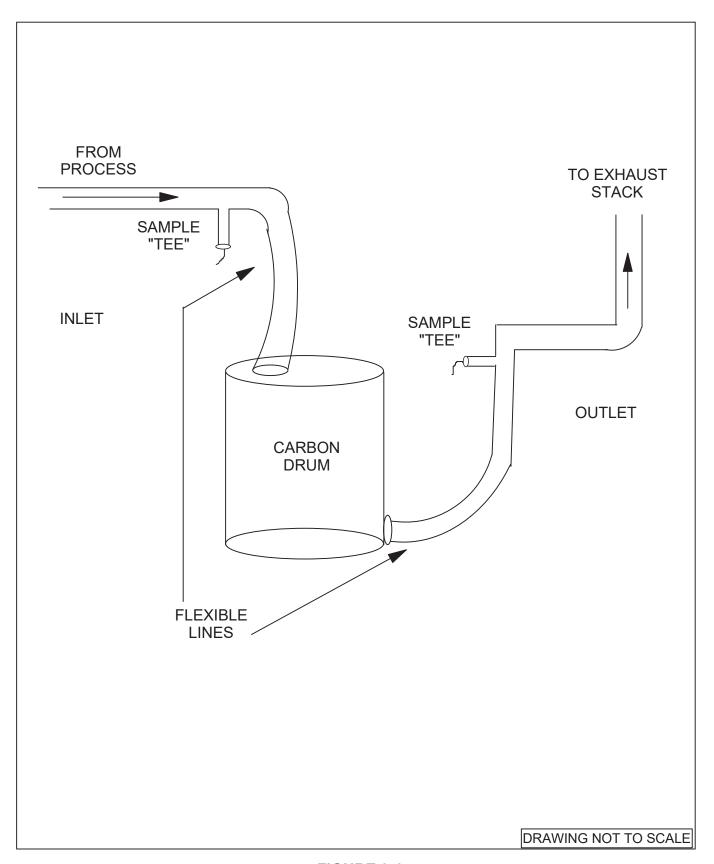


FIGURE 3-1
BUILDING J26
CARBON DRUM INLET AND OUTLET SAMPLE LOCATION

### 4. SAMPLING AND ANALYTICAL METHODS

### 4.1 GAS SAMPLING PROCEDURES

The purpose of this section is to describe the gas emissions sampling train and to provide details of the sampling and analytical procedures utilized during the emissions test program.

### 4.2 EPA METHOD 0010

The sampling train utilized to perform the HFPO Dimer Acid and PFAS sampling was an EPA Method 0010 train (see Figure 4-1). The Method 0010 probe consisted of a flexible length of poly tubing. The tubing was connected directly to a heated borosilicate filter holder containing a solvent extracted glass fiber filter.

A section of borosilicate glass connected the filter holder exit to a Grahm (spiral) type ice water-cooled condenser and an ice water-jacketed sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 resin tube was equipped with an inlet temperature sensor. The XAD-2 resin trap was followed by a condensate knockout impinger and a series of two impingers that contained 100 mL of high purity distilled water. The train also included a second XAD-2 resin trap behind the impinger section to evaluate possible sampling train breakthrough. Each XAD-2 resin trap was connected to a 1-L condensate knockout trap. The final impinger contained 300 grams of dry pre-weighed silica gel. All impingers and the condensate traps were maintained in an ice bath. Ice water was continuously circulated in the condenser and both XAD-2 modules to maintain method required temperature. A control console with a leakless vacuum pump, a calibrated orifice, and dual inclined manometers was connected to the final impinger via an umbilical cord to complete the sample train.

Leak checks were performed on the sampling apparatus according to reference method instructions, prior to and following each run, component change (if required) or during mid-point port changes.

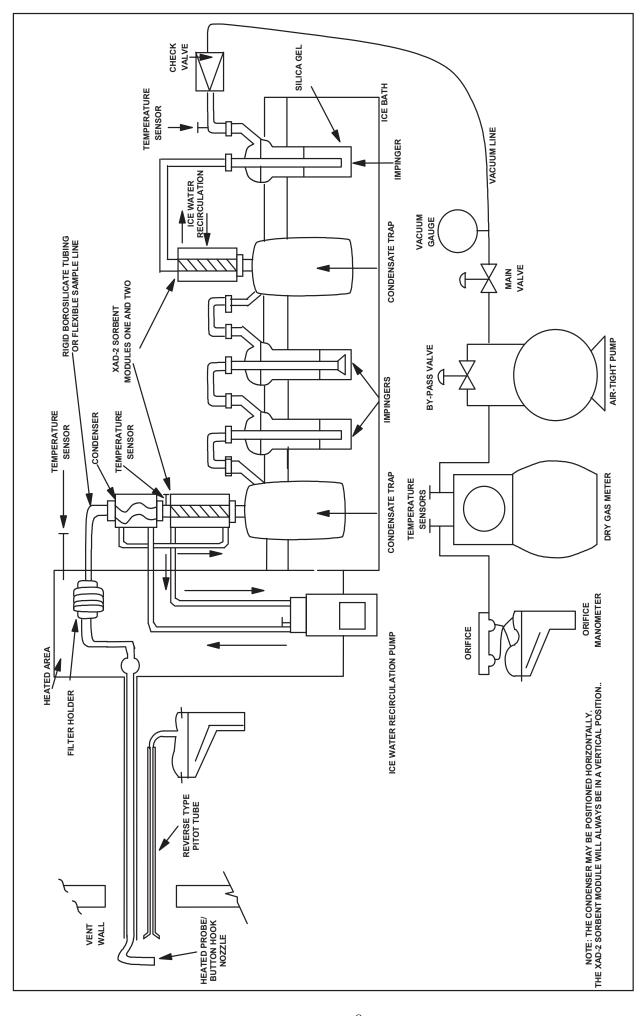


FIGURE 4-1 EPA METHOD 0010 SAMPLING TRAIN

### 4.2.1 EPA Method 0010 Sample Recovery

At the conclusion of each test, the sampling train was dismantled, the openings sealed, and the components transported to the field laboratory trailer for recovery.

A consistent procedure was employed for sample recovery:

- 1. The two XAD-2 traps were covered (to minimize light degradation) sorbent modules (one and two) were sealed and labeled.
- 2. The glass fiber filter(s) were removed from the holder with tweezers and placed in a polyethylene container along with any loose particulate and filter fragments.
- 3. The particulate adhering to the internal surfaces of the flexible tubing and front half of the filter holder were rinsed with a solution of methanol and ammonium hydroxide into a polyethylene container while brushing a minimum of three times until no visible particulate remains. Particulate adhering to the brush was rinsed with methanol/ammonium hydroxide into the same container. The container was sealed.
- 4. The volume of liquid collected in the first condensate trap was measured, the value recorded, and the contents poured into a polyethylene container.
- 5. All train components between the filter exit and the first condensate trap were rinsed with methanol/ammonium hydroxide. The solvent rinse was placed in a separate polyethylene container and sealed.
- 6. The volume of liquid in impingers one and two, and the second condensate trap, were measured, the values recorded, and the sample was placed in the same container as Step 4 above and sealed.
- 7. The two impingers, condensate traps, and connectors were rinsed with methanol/ammonium hydroxide. The solvent sample was placed in a separate polyethylene container and sealed.
- 8. The silica gel in the final impinger was weighed and the weight gain value recorded.
- 9. Site (reagent) blank samples of the methanol/ammonium hydroxide, XAD resin, filter and distilled water were retained for analysis.

Each container was labeled to clearly identify its contents. The height of the fluid level was marked on the container of each liquid sample to provide a reference point for a leakage check during transport. All samples were maintained cool.

During the test campaign, an M-0010 blank train was setup near the test location, leak checked and recovered along with the respective sample train. Following sample recovery, all samples were transported to TestAmerica Laboratories, Inc. (TestAmerica) for sample extraction and analysis.

See Figure 4-2 for a schematic of the M-0010 sample recovery process.

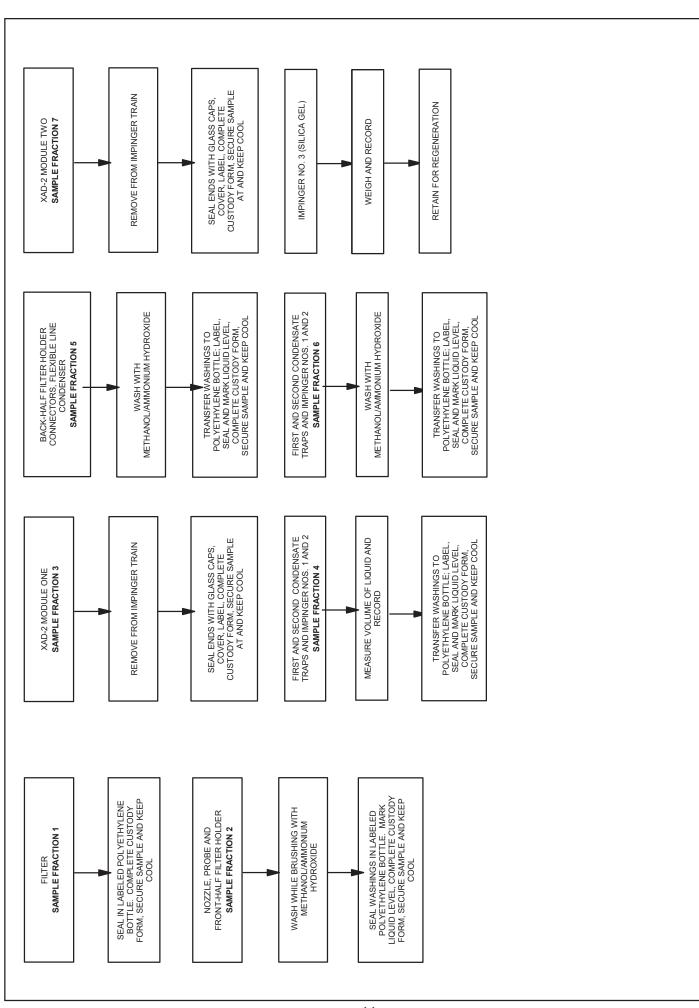
### 4.2.2 EPA Method 0010 - Sample Analysis

Method 0010 sampling trains resulted in four separate analytical fractions for HFPO Dimer Acid analysis according to SW-846 Method 3542:

- Front-Half Composite—comprised of the particulate filter, and the flexible tubing and front-half of the filter holder solvent rinses;
- Back-half Composite—comprised of the first XAD-2 resin material and the back-half of the filter holder with connecting glassware solvent rinses;
- Condensate Composite—comprised of the aqueous condensates and the contents of impingers one and two with solvent rinses;
- Breakthrough XAD-2 Resin Tube—comprised of the resin tube behind the series of impingers.

The second XAD-2 resin material was analyzed separately to evaluate any possible sampling train HFPO-DA breakthrough.

The front-half and back-half composites and the second XAD-2 resin material were placed in polypropylene wide-mouth bottles and tumbled with methanol containing 5% NH<sub>4</sub>OH for 18 hours. Portions of the extracts were processed analytically for the HFPO dimer acid by liquid



chromatography and duel mass spectroscopy (HPLC/MS/MS). The condensate composite was concentrated onto a solid phase extraction (SPE) cartridge followed by desorption from the cartridge using methanol. Portions of those extracts were also processed analytically by HPLC/MS/MS.

Samples were spiked with isotope dilution internal standard (IDA) at the commencement of their preparation to provide accurate assessments of the analytical recoveries. Final data was corrected for IDA standard recoveries.

### 4.3 GAS COMPOSITION

The oxygen and carbon dioxide content of the sample gas was measured according to EPA Method 3/3A procedures which incorporate the latest updates of EPA Method 7E. A Servomex Model 1440 analyzer (or equivalent) was used to measure oxygen content. A Servomex Model 1440 analyzer (or equivalent) was used to measure carbon dioxide content of the sample gas. Both analyzers were calibrated with EPA Protocol gases prior to the start of the test program and performance was verified by calibration checks before each test run.

### 4.4 VOLUMETRIC FLOW RATE

The volumetric flow rate was provided by Chemours and was assumed to be 1,000 scfh.

### 5. DETAILED TEST RESULTS AND DISCUSSION

The test was a minimum of 200 minutes in duration. A total of one test run on the inlet and outlet was performed simultaneously. Table 5-1 provides detailed test data and test results for the Carbon Drum Inlet and Carbon Drum Outlet.

The test results on the carbon drum outlet may be high biased for the following PFAS compounds due to background levels detected in the blank train samples: PFHxA, PFHpA, PFOA, and PFDA. As a result, the removal efficiencies for those PFAS compounds may be low biased.

# TABLE 5-1 CHEMOURS - CHAMBERS WORKS SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

Test Data		
Run number	1	2
Location	Carbon Drum Inlet	Carbon Drum Outlet
Date	08/08/19	08/08/19
Time period	0928-1328	0928-1328
SAMPLING DATA:		
Sampling duration, min.	240.0	240.0
Barometric pressure, in. Hg	29.79	29.79
Avg. orifice press. diff., in H <sub>2</sub> O	1.00	1.00
Avg. dry gas meter temp., deg F	94.8	95.6
Avg. abs. dry gas meter temp., deg. R	555	556
Total liquid collected by train, ml	110.0	115.9
Std. vol. of H <sub>2</sub> O vapor coll., cu.ft.	5.18	5.46
Dry gas meter calibration factor	0.9972	0.9979
Sample vol. at meter cond., dcf	136.362	141.020
Sample vol. at std. cond., dscf <sup>(1)</sup>	129.118	133.421
GAS STREAM COMPOSITION DATA:		
CO <sub>2</sub> , % by volume, dry basis	0.0	0.0
O <sub>2</sub> , % by volume, dry basis	0.0	3.2
N <sub>2</sub> , % by volume, dry basis	100.0	96.8
Molecular wt. of dry gas, lb/lb mole	28.00	28.13
H <sub>2</sub> 0 vapor in gas stream, prop. by vol.	0.039	0.039
Mole fraction of dry gas	0.961	0.961
Molecular wt. of wet gas, lb/lb mole	27.61	27.73
GAS STREAM VELOCITY AND VOLUMETRIC FLOW D	ATA:	
Total number of traverse points	1	1
Avg. gas stream volumetric flow, dscf/min.	17	17

<sup>(1)</sup> Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

### **CHEMOURS - CHAMBERS WORKS**

### SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

	1		2
	Carbon Drum		Carbon Drum
			Outlet
			08/08/19
	0928-1328		0928-1328
	19726.4		33.8
	38.246		0.034
<	9.898		0.060
	0.133		0.068
	67.100		0.024
<	9.898	<	0.103
<	9.898		0.012
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
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<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
<	9.898	<	0.103
	435518.0		386.33
	< < < < < < < < < < < < < < < < < < <	Carbon Drum Inlet 08/08/19 0928-1328  19726.4 38.246 < 9.898 0.133 67.100 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898	Carbon Drum Inlet 08/08/19 0928-1328  19726.4 38.246 < 9.898 0.133 67.100 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898 < 9.898

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission concentrations.

# CHEMOURS - CHAMBERS WORKS SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

### TEST DATA

IESI DATA				
Run number	1		2	
	Carbon Drum			Carbon Drum
Location		Inlet		Outlet
Date		08/08/19		08/08/19
Time period		0928-1328		0928-1328
EMISSION RESULTS, ug/dscm.				
Perfluorobutanoic acid (PFBA)		5394.15		8.94
Perfluoropentanoic acid (PFPeA)		10.46		0.009
Perfluorohexanoic acid (PFHxA)	<	2.707		0.016
Perfluoroheptanoic acid (PFHpA)		0.036		0.018
Perfluorooctanoic acid (PFOA)		18.35		0.006
Perfluorononanoic acid (PFNA)	<	2.707	<	0.027
Perfluorodecanoic acid (PFDA)	<	2.707		0.003
Perfluoroundecanoic acid (PFUnA)	<	2.707	<	0.027
Perfluorododecanoic acid (PFDoA)	<	2.707	<	0.027
Perfluorotridecanoic acid (PFTriA)	<	2.707	<	0.027
Perfluorotetradecanoic acid (PFTeA)	<	2.707	<	0.027
Perfluorobutanesulfonic acid (PFBS)	<	2.707	<	0.027
Perfluoropentanesculfonic acid (PFPeS)	<	2.707	<	0.027
Perfluorohexanesulfonic acid (PFHxS)	<	2.707	<	0.027
Perfluoroheptanesulfonic acid (PFHpS)	<	2.707	<	0.027
Perfluorooctanesulfonic acid (PFOS)	<	2.707	<	0.027
Perfluorononanesulfonic acid (PFNS)	<	2.707	<	0.027
Perfluorodecanesulfonic acid (PFDS)	<	2.707	<	0.027
Perfluorooctanesulfonamide (FOSA)	<	2.707	<	0.027
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	2.707	<	0.027
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	2.707	<	0.027
4:2 FTS	<	2.707	<	0.027
6:2 FTS	<	2.707	<	0.027
8:2 FTS	<	2.707	<	0.027
HFPO Dimer Acid		119091.68		102.234

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission concentrations.

### **CHEMOURS - CHAMBERS WORKS**

### SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

	CIT	-	A 17	
тк:	ST	I)	A I	ľA

1		2	
	Carbon Drum		Carbon Drum
	Inlet		Outlet
	08/08/19		08/08/19
	0928-1328		0928-1328
	3.368E-07		5.585E-10
	6.530E-10		5.618E-13
<	1.690E-10		9.881E-13
	2.271E-12		1.120E-12
	1.146E-09		3.883E-13
<	1.690E-10	<	1.694E-12
<	1.690E-10		2.021E-13
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
<	1.690E-10	<	1.694E-12
	7.436E-06		6.384E-09
	< < < < < < < < < < < < < < < < < < <	Carbon Drum Inlet 08/08/19 0928-1328  3.368E-07 6.530E-10 < 1.690E-10 2.271E-12 1.146E-09 < 1.690E-10	Carbon Drum Inlet 08/08/19 0928-1328  3.368E-07 6.530E-10 < 1.690E-10 2.271E-12 1.146E-09 < 1.690E-10

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission concentrations.

### **CHEMOURS - CHAMBERS WORKS**

# SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

### **TEST DATA**

	1		2
	Carbon Drum		Carbon Drum
	Inlet		Outlet
	08/08/19		08/08/19
	0928-1328		0928-1328
	3.368E-04		5.585E-07
	6.530E-07		5.618E-10
<	1.690E-07		9.881E-10
	2.271E-09		1.120E-09
	1.146E-06		3.883E-10
<	1.690E-07	<	1.694E-09
<	1.690E-07		2.021E-10
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
<	1.690E-07	<	1.694E-09
	7.436E-03		6.384E-06
	< < < < < < < < < < < < < < < < < < <	Carbon Drum Inlet 08/08/19 0928-1328  3.368E-04 6.530E-07 < 1.690E-07 2.271E-09 1.146E-06 < 1.690E-07	Carbon Drum Inlet 08/08/19 0928-1328  3.368E-04 6.530E-07 < 1.690E-07 2.271E-09 1.146E-06 < 1.690E-07

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission rates.

### **CHEMOURS - CHAMBERS WORKS**

## SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

### **TEST DATA**

IESI DATA				
Run number		1		2
		Carbon Drum		Carbon Drum
Location		Inlet		Outlet
Date		08/08/19		08/08/19
Time period		0928-1328		0928-1328
EMISSION RESULTS, g/sec.				
Perfluorobutanoic acid (PFBA)		4.241E-05		7.031E-08
Perfluoropentanoic acid (PFPeA)		8.222E-08		7.073E-11
Perfluorohexanoic acid (PFHxA)	<	2.128E-08		1.244E-10
Perfluoroheptanoic acid (PFHpA)		2.859E-10		1.410E-10
Perfluorooctanoic acid (PFOA)		1.442E-07		4.889E-11
Perfluorononanoic acid (PFNA)	<	2.128E-08	<	2.133E-10
Perfluorodecanoic acid (PFDA)	<	2.128E-08		2.544E-11
Perfluoroundecanoic acid (PFUnA)	<	2.128E-08	<	2.133E-10
Perfluorododecanoic acid (PFDoA)	<	2.128E-08	<	2.133E-10
Perfluorotridecanoic acid (PFTriA)	<	2.128E-08	<	2.133E-10
Perfluorotetradecanoic acid (PFTeA)	<	2.128E-08	<	2.133E-10
Perfluorobutanesulfonic acid (PFBS)	<	2.128E-08	<	2.133E-10
Perfluoropentanesculfonic acid (PFPeS)	<	2.128E-08	<	2.133E-10
Perfluorohexanesulfonic acid (PFHxS)	<	2.128E-08	<	2.133E-10
Perfluoroheptanesulfonic acid (PFHpS)	<	2.128E-08	<	2.133E-10
Perfluorooctanesulfonic acid (PFOS)	<	2.128E-08	<	2.133E-10
Perfluorononanesulfonic acid (PFNS)	<	2.128E-08	<	2.133E-10
Perfluorodecanesulfonic acid (PFDS)	<	2.128E-08	<	2.133E-10
Perfluorooctanesulfonamide (FOSA)	<	2.128E-08	<	2.133E-10
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	2.128E-08	<	2.133E-10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	2.128E-08	<	2.133E-10
4:2 FTS	<	2.128E-08	<	2.133E-10
6:2 FTS	<	2.128E-08	<	2.133E-10
8:2 FTS	<	2.128E-08	<	2.133E-10
HFPO Dimer Acid		9.362E-04		8.037E-07

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission rates.

### **CHEMOURS - CHAMBERS WORKS**

# SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

### **TEST DATA**

Date		08/08/19	
Time period		0928-1328	
Carbon Drum Removal Efficiency, %			
Perfluorobutanoic acid (PFBA)		99.83	
Perfluoropentanoic acid (PFPeA)		99.91	
Perfluorohexanoic acid (PFHxA)	<u>&lt;</u>	99.42	*
Perfluoroheptanoic acid (PFHpA)		50.67	
Perfluorooctanoic acid (PFOA)		99.97	
Perfluorononanoic acid (PFNA)		NA	
Perfluorodecanoic acid (PFDA)	<u>&lt;</u>	99.88	*
Perfluoroundecanoic acid (PFUnA)		NA	
Perfluorododecanoic acid (PFDoA)		NA	
Perfluorotridecanoic acid (PFTriA)		NA	
Perfluorotetradecanoic acid (PFTeA)		NA	
Perfluorobutanesulfonic acid (PFBS)		NA	
Perfluoropentanesculfonic acid (PFPeS)		NA	
Perfluorohexanesulfonic acid (PFHxS)		NA	
Perfluoroheptanesulfonic acid (PFHpS)		NA	
Perfluorooctanesulfonic acid (PFOS)		NA	
Perfluorononanesulfonic acid (PFNS)		NA	
Perfluorodecanesulfonic acid (PFDS)		NA	
Perfluorooctanesulfonamide (FOSA)		NA	
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)		NA	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)		NA	
4:2 FTS		NA	
6:2 FTS		NA	
8:2 FTS		NA	
HFPO Dimer Acid		99.91	

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for each analytical fraction of the target compound in order to develop emission rates and determine carbon drum removal efficiency.

NA Removal efficiency was not calculated because the cabron drum inlet and carbon drum outlet emission rates were both non-detect.

<sup>\*</sup> Removal efficiency calculated using method detection limit values for carbon drum inlet emission concentration rates

# APPENDIX A RAW AND REDUCED TEST DATA

# CHEMOURS - CHAMBERS WORKS INPUTS FOR TARGET COMPOUND CALCULATIONS BUILDING J-26 CARBON DRUM INLET AND OUTLET

1	2
Carbon Drum Inlet	Carbon Drum Outlet
08/08/19	08/08/19
0928-1328	0928-1328
JDO/SR	JDO/SR
1.0000	1.0000
94.8	95.6
136.362	141.020
29.79	29.79
75.0	95.0
35.0	20.9
0.0	0.0
0.0	3.2
100.0	96.8
240.0	240.0
0.9972	0.9979
1	1
	08/08/19 0928-1328 JDO/SR 1.0000 94.8 136.362 29.79 75.0 35.0 0.0 0.0 100.0 240.0

Source Gas Analysis Data Sheet - Modified Method 3/3A Client Chemous 5 Location/Plant Chumbers works 1440 Analyzer Make & Model Servome X W.O. Number Calibration 0955 Calibration Gas Calibration Gas Analyzer Analyzer Analysis Value Response Value Response Number Span O<sub>2</sub> (%) O<sub>2</sub> (%) CO<sub>2</sub> (%) CO2 (%) 0.0 ۵, 1 Zero 12.1 200 9 Mid 2 21.2 3 High Average Analyzer Analyzer Run Response Response Number Analysis Time O<sub>2</sub> (%) CO<sub>2</sub> (%) 1350 2 3 Average Analyzer Analyzer Run Response Response Analysis Time Number O<sub>2</sub> (%) CO<sub>2</sub> (%) 3.2 3 Average Span Cylinder ID CC18055 Mid

WESTERN.

High

INC7

outlet

<sup>\*\*</sup>Report all values to the nearest 0.1 percent

### SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

		Chem	ours		W.O. #		15418.001.005.0001			
Location/Pla	nt	Chamber	s Works	Sour	ce & Location		Building J26	CD Outlet		•
Run No.	1_		009	$\Gamma$	Sample Date	8/8/	Building J26 CD Outlet  8/8/9/PRECOVERY Date Filter Number  Filter Number  Recovery Date Filter Number  Filter Number  Recovery Date Filter Number		3/8/	
Sample I.D.	Chemours - C	Carbon Drum O	utlet - <b>JX -</b> 1 - MC	010 -	Analyst '	M2	_	Filter N	umber	NY
Coation/Plant										
	11	2	3	4	5	6	7	Imp.Total	8	Total
Contents		HPLC H20	HPLC H20							
Final		145	100	0					370,	
Initial	0	100	100	0						
Gain	40			O		<u> </u>		94	204	119,9
Impinger Colo	or(	all C	lem		Labeled?	<u> </u>				
Silica Gel Cor	ndition	blu	40%		Sealed?		<u>-</u>			
Run No.	2		•		Sample Date			Recove	ry Date	
Sample I.D.	Chemours - C	Carbon Drum O	utlet - IN - 2 - MC	010 -	Analyst		_	Filter N	umber	
					Imping	er				
				4	5	6	7	Imp.Total		Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final					_					
Initial		100	100_						300	
Gain									L	
Impinger Cold	or				Labeled?					
Silica Gel Cor	ndition		<del></del>		Sealed?					
Dam Na			<u> </u>		Carrela Data	<u> </u>	<u></u>			
	<del></del>	>b D O		2040		5 6 7 Imp.Total 8 T Silica Gel 300 300 300 seled?  aled?  Recovery Date salyst Filter Number				
Sample I.D.	Chemours - C	Jaibon Dium O	uliet - IN - 3 - MC	010-					unber	
	1	2	3	4			7	Imp.Total	8	Total
Contents	Empty									
Final						<u></u>				
Initial		100	100						300	
Gain										
Impinger Colo	or				Labeled?					•
Silica Gel Cor	ndition				Sealed?	-		*		·

Check COC for Sample IDs of Media Blanks

WESTERN

Balance Chech Known 500 Balance 499.7 Von

### SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client	<u>.                                      </u>	Chen	···		W.O. #			1.005.0001		_		
Location/Pla	int	Chambei	rs Works	Source	e & Location		Building J26 CD Inlet					
Run No.					Sample Date	8/8/	19	Recove	ery Date	3/8/K		
Sample I.D.	Chemours - 0	Carbon Drum In	let - IN - 1 - M00	10 -	Analyst	Ono_	_	Filter N	lumber	NA		
					Imping	er						
	1	2	3	4	5	6	7	Imp.Total	8	Total		
Contents	Empty	HPLC H20	HPLC H20					- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Silica Gel			
Final	50	125	100	0					335,0	<b>&gt;</b>		
Initial	0	100	100	0					300			
Gain	40	24	0	ဂ				7.5	35	110		
Impinger Cold	or <u>Ø</u>	1110/0	W		Labeled?							
Silica Gel Cor	ndition	3092	4e		Sealed?					<b>-</b> -		
Run No.	2				Sample Date			Recove	ry Date			
Sample I.D.   Chemours - Carbon Drum Inlet - IN - 2 - M0010 -   Analyst	_	Filter N	umber									
					Imping	er						
	1	2	3	4			7	Imp.Total	8	Total		
Contents	Empty	HPLC H20	HPLC H20	.,,					Silica Gel	10.01		
Final										,		
Initial		100	100	_					300			
Gain												
Impinger Colo	r				Labeled?							
Silica Gel Cor			_		Sealed?					-		
Run No.	3_				Sample Date			Recove	ry Date			
Sample I.D.	Chemours - C	Carbon Drum In	let - IN - 3 - M00	10 -	Analyst			Filter N	umber			
		I			Impinge	r						
	11	2	3	4	5	6	7	Imp.Total	8	Total		
Contents	Empty	HPLC H20	HPLC H20		<u> </u>				Silica Gel			
Final			_									
Initial		100	100						300			
Gain				· ·								
Impinger Colo	r				Labeled?							
Silica Gel Con	dition				Sealed?	<del></del>		***				

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WESTERN.

Balana Ched Known 500 Balana 499.7 Vol

### SAMPLE RECOVERY FIELD DATA

Client		Chen	CNO		W.O. #									
Location/Pla	nt 7	hum	e we	Sourc	e & Location	12	<b>b</b> C	-73		•				
Run No. Sample I.D.	1	131			Sample Date	3/2/	14		ery Date <b>%</b> Number	18/13 Vn				
					Impinge									
Contents	1	2	3	4	5	6	7	Imp.Total	8 Silica Gel	Total				
	0	100	190	0					3>0					
Final Initial	0	190	100	0					300					
Gain	0	0	0	v		,			0	D				
Impinger Cold	ог <b>Д</b>	1110	er,	<del> </del>	Labeled?	V								
Silica Gel Cor	ndition	54	J00 }		Sealed?									
Run No.			·/·-		Sample Date			Recove	ery Date					
Sample I.D.						Filter N	lumber							
					Analyst Filter Number Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total				
Contents									Silica Gel					
Final														
Initial							<u> </u>							
Gain														
Impinger Cold	or				Labeled?									
Silica Gel Cor	ndition				Sealed?									
Run No.					Sample Date Recovery Date									
Sample I.D.					Analyst		<del> </del>	Filter N	lumber					
	1	2	3	4	Impinge 5	9 <b>r</b> 6	7	Imp.Total	8	Total				
Contents	•	-			Ŭ.		,	mip.rotai	Silica Gel	Total				
Final														
Initial					1									
Gain														
Impinger Cold	or				Labeled?									
Silica Gel Cor	ndition	ere egen sie aus eine jameier bilder das	<del></del>		Sealed?									

Check COC for Sample IDs of Media Blanks



### CB Inles

ISOKINE	TIC I	TIELD D	ATA SHI	EÉT		EPA M	ethod 0010 -		Dimer	Acid			Page <u></u>	<u>2</u>
Client		Chemours		Stack Condi	tions	Meter Box ID	4	30				K Factor	NA	
W.O.#	154	18.001,005.000		Assu	med Actual	Meter Box Y		<u> </u>	972					
Project ID		Chemours	% Moisture			Meter Box Del		5715	11	O	, 163v	Initial	Mid-Point	Final
Mode/Source ID	C	arbon Drum Inle		Maria Managaran	The state of the s	_Probe ID / Ler		·	6′	Sample Train	` '	1009		1 2006
Samp. Loc. ID Run No.ID		IN	Silica gel (g)			Probe Materia		U Bero		Leak Check		. !?		Ves / no
Test Method ID		1 M0010	CO2, % by V O2, % by Vo		11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Pitot / Thermo Pitot Coefficie		0.84	read in the second	Pitot leak cit	eck good	yes / no	yes no	yes / no
Date ID		7AUG2019	Temperature			Nozzie ID	" NA-	<u> </u>		Method 3 Sy	on good	yes y no	ves / no	6€\$7 no
Source/Location	Build	ling J26 CD In			<b>)</b>	Nozzle Measu	rements 1 21/1	1.	<u> </u>	Temp Che		Pre-Te		Post-Test Set
Sample Date		3 - 90-	19 Static Press		W	Avg Nozzle Di		<u> </u>	· · · · · · · · · · · · · · · · · · ·	Meter Box To		76		
Baro. Press (in Hg)	7	1.79	VV			Area of Stack				Reference To	•	14		
Operator	77	DICA	Ambient Ten	np (°F)	30	Sample Time		100		Pass/Fail (+/-	- 2 <sup>o</sup> )	Pass	/ Fail	Pass / Fall
	— <del>(-1</del> )	1 70	<del>-</del>			Total Traverse	Pts I-			Temp Chang	e Response ?	The second secon		yes / no
TRAVERSE S	AMPLE	CLOCK TIME	VELOCITY	ORIFICE	DRY GAS METER	STACK	DGM OUTLET TEMP	PROBE	FILTER	IMPINGER	SAMPLE	XAD EXIT		COMMENTS
POINT NO.	ME (min)	(plant time)	PRESSURE Delta		READING (ft <sup>2</sup> )	TEMP (°F)	(°F)	TEMP (°F)	BOX TEMP	EXITTEME		TEMP(F)		
		0923	P (in H2O)	Delta H (In H2C		4			(F)	(oF)	(in Hg)			Test
7-1	<del>-}</del> -	07/5	WY	10	11.47 J	. 214	36	11.0	72 L	67	- ال	<b>4</b> .		10
1-1			DIS	1 1	199.4	UB	- X-3	NA	150	-		20		Time
	10		<del></del>	1,0	1	<del>                                     </del>	87.	-	125	97	7	73		1,,,,,,
	14		<del></del>	1.0	1 5 D 1/2	<del>                                     </del>	87	<del></del>	193	67		92		Marker
	<u> 20</u>		<del></del>	1,0	1 2 7 3	<del></del>	24	<del></del>	100	44	7	123		1000
	25		ļ	1,0	155/K	<del>                                     </del>	84		123	49	1	28		Aroles
	20			1,0	58.0		34		126	5%	7	22		
	35			1,0	41.8		<b>9</b> 5		146	60	<u> </u>	57		Jahar
	45			10	640		87		172	58	9	52		
	44			1,0	6611		90		125	60	4	20		
	50			1.0	C912		20		125	9	4	60		<u> </u>
	99			1/5	72.9		91		127	59	4	59		marke
	63	1020		773	74,4		93		124	84	4	60		
	65	7 - 1.0		1.0	78,0		9.14		124	80	4	59		appled
	70			10	3111		93		224	37	2	37		~
	76			10	65,4		65	1	125	37	4	6%		$- \circ t$
	<u> </u>			110	260		96		175	8/	4	593		K-1
	33			1/2	9.01	1 1	Gil		754	61	ركا	20		101
	45		<del>                                     </del>	1/1/2	472	<del>                                     </del>	91		12 4	1	t	60		
	93			100	423		57		1/25	とか	1	77		
<del></del>	102			1.0	647	1 1	148		192V	60	4	27		
	104			1.0	700.6	<del>                                     </del>	9,0	-t-	1/2/4	37	4	7		
	110			110	1 3 11	<del>  -</del> }	65	<del>                                     </del>	124	56	4	60		
<del> </del>	114		<del>-                                    </del>	1/1/-	1 12	<del>;                                    </del>	48	<del>                                     </del>	724	24	1	60		
<b>-</b>	120	1113	<del></del>	<del>                                     </del>	3/3	<del>                                     </del>	99	<del>                                     </del>	121	-	4			<del></del>
<u> </u>	103	1110	<del></del>	10	1001	<del>   </del>	00		1,59	77	J-	60	<del></del>	
<u> </u>	100	L	Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg fm	Min/Max	Min/Max	Max	Max Vac	Min/Max		
7VV-27E			Avg Della i	Avg Delta II	Total volume	Avg 13	Avg IIII	I WIII WINDA	IVIII VIVICIA	IVIGA	IVIAX VAC	IVIII VIVIBA		
W/ES			Avg Sqrt Delta P	Avg Sqrt Del H	Commonts:			L			EDA Mothod	0010 from EB/	SW 946	
			g cq/t Dona	,,	Comments.		1. ^	1		۱ .	FLY MERIOD	OUTU HOIH EPA	المراكبة	r
		İ		<u> </u>	」 んって	: wa	the in	Inve		non	Va	re	(V)	U .
					שעם		270 kg 1	100	~ A	at	K 11	ر بدو	1. na	10 a. M.
					PL	יינטאי	ter în Buk t	1	ング	U	1 64	7	TYTE	~
						or t	مراسه سرم	المعالم	4		1000		•	
			i, evilensidassi.				• • • • • • • • • • • • • • • • • • •	Self-self-response or self-response		p				

# CB INLET

### ISOKINETIC FIELD DATA SHEET

### EPA Method 0010 - HFPO Dimer Acid

Page Zof 2

-	Chemours	Operator	mo/	sn,	-							
Loc.	Building J26 CD Inlet	Run No. Date	- 6	19	_ K Factor	_NA						
1	CD lillet	Date			1	<i>N</i>						
	SAMPLE CLOCK TIME	VELOCITY	ORIFICE	DRY GAS METER				FILTER	IMPING	SAMPLE		
/ERSE NO.	TIME (min) (plant time)	PRESSURE Delt	PRESSURE	READING (ft <sup>3</sup> )	STACK	DGM OUTLET TEMP	PROBE TEMP (°F)	BOX TEMP	EXIT TEMP	TRAIN VAC	XAD EXIT TEMP (F)	COMME
, ,		P (in H2O)	Delta H (In H20)		TEMP (°F)	(°F)	(Emerge)	(F)	(°F)	(In Hg)		
	0		1 7 -	1200		, _		75 0	7		711	
	172	1	110	19,9		100		127	69	4	64	<u> </u>
	135	<del>                                     </del>	1,0	17,14	<del>                                     </del>	7/00		135	6/	8	60	
	140	<del>                                     </del>	17.3	21.0	<del>  </del>	106			60	<del>- Z</del> -	6/	<del> </del>
	144	<del>  </del>	10	23.3	<u> </u>	100		125		4	6/	
	150	<b></b>	1.0	26.3		100	12	135	<del></del>	4	63	<u> </u>
	199	<del>  </del>	1.0	79.0		101		142			62	
	160	<del>                                     </del>	1.0	21.8	<b> </b>	100		125	65	4	63	
	165		10	35.6	<b></b>	100		127	64	7	63	<u> </u>
	170		1.0	37.7		120		125	64	-7-	63	
	130 122		10		13.3	1 97		124	64	4	64	
\	134		1.0	46.2		99		125	64	4	64	
	190		1.0	489		98		179	64	9	64	<u> </u>
	199		1.0	51,2		97		124	65	9	6/1	64
	200		7.0	34.0		98		125	64	4	163	
	205		10	57.6		96_		125	60	<u> </u>	55	
	210		1,0	603		99		174	59	4	45	
	214		1,0	4.0		99		1725	58	4	45	
	220		1,0	66.5		95	}	175	49	4	46	
	775		1:0	69.2		9		725	34	7	46	
<del>- 1</del> 1	230		1.0	71,1		94		125	60	4	47	
	235		1.0	74.4		95		725	60	4	47	
	2701723	de	1,5	777.39	11. 1	94		123	60	9	48	
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		Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	<del> </del>
n/n/^											<u> </u>	
$\mathcal{E}_{\mathcal{N}}$		Avg Sqrt Delta P	Avg Sqrt Del H	Comments:								=

CB OUTLET

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Client		Chemours		Stack Condit	tions	Meter Box ID	)		<b>42</b>				K Factor	121/	1
W.O.#	154	118.001.005.000	)1	Asşun	ned Actual	Meter Box Y				9979	-		Kracioi	NA	
Project ID		Chemours	% Moisture	ZA	)W	Meter Box Do	el H	1.40	3 477		-		Initial	Mid-Point	- Final
Mode/Source ID	Car	rbon Drum Outk	et Impinger Vol	(ml) <b>30%</b>	7	Probe ID / Le	ength				Sample Train	າ (ft <sup>3</sup> )	-010	,	12018
Samp. Loc. ID		W Or	Silica gel (g)	70		Probe Materi	al	Plusa	16 BOTO		Leak Check	@ (in Hg)	75		6
Run No.ID		1	CO2, % by V	ol	-	Pitot / Therm	ocouple ID	Di			Pitot leak ch	eck good N	Ayes / no	yes no	yes/no
Test Method ID		M0010	O2, % by Vol			Pitot Coeffici	ent		مهورو		Pitot Inspecti	ion good $ u$	yes / no	yes/no	yes/no
Date ID		7AUG2019	Temperature			Nozzle ID		DE			Method 3 Sy		yas no	yes / no	yes/no
Source/Location	Buildi	ng J26 CD Ou				Nozzie Meas	urements	NU			Temp Che	ck	Pre-Te		Post-Test Set
Sample Date	- 4	6787	Static Press (	in H₂O)	6	Avg Nozzle D	Dia (in)	NU			Meter Box To	emp	79		
Baro. Press (in Hg	) <del>L</del>	9,79	<del></del>			Area of Stack	(ft²)	NE	}		Reference To	emp	80		
Operator	4	10/16	Ambient Tem	ıp (°F)	90	Sample Time	)	<del></del>			Pass/Fail (+/	- 2°)	Case	/Fall	Pass / Fall
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	12		1	1,0	86.7	<u> </u>	- 5	3 <b>C</b> _		126	67	5	50		
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	2>			1,0	92.1			0.0		126	67	3	42		201.
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	40			1/0	1 3 15			12	<u> </u>	125	60	<u> </u>	42		
	45			110	06,7			94		125	58	5	91		<u> </u>
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	35			1.0	136			i t		126	30	15	42		mouto
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<b>EXXY</b>	小郎刀	•			<u> </u>	<u> </u>	<u></u>		<u> </u>		l				
	den Minera	~	Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							EPA Method	0010 from EPA	N SW-846	
					)										

CB OUTLET

### ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - HFPO Dimer Acid Page 2 of 2

Client Chemours Operator Source **Building J26** Run No. CD Outlet K Factor Sample Loc. Date DRY GAS METER SAMPLE CLOCK TIME VELOCITY ORIFICE SAMPLE FILTER TRAVERSE STACK DOMOUTLET TEMP PROBE XAD EXIT TIME (min) (plant time) READING (ft3) RESSURE Delta **BOX TEMP** EXIT TEME TRAIN VAC COMMENTS PRESSURE POINT TEMP ("F) TEMP (°F) TEMP (F) (c(3))P (in H20) Delta H (in H20) (F) (in Hg) (°F) 0 0 126 0 126 43 20 64 1228 90 Q D O 6 06 ,0 10,0 0 0 201 Avg Delta P Avg Delta H Total Volume Avg Ts Avg Tm Min/Max Min/Max Max Temp Max Vac Max Temp Avg Sqrt Delta P Avg Sqrt Del H Comments:

30

# APPENDIX B LABORATORY ANALYTICAL REPORT



### **ANALYTICAL REPORT**

Job Number: 140-16315-1

Job Description: Building J-26 Inlet - Method 0010

Contract Number: LBIO-67048

For:

Chemours Company FC, LLC The c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Lowwelf Ackins

Approved for release Courtney M Adkins Project Manager I

Courtney M Adkins, Project Manager I 5815 Middlebrook Pike, Knoxville, TN, 37921 (865)291-3000 courtney.adkins@testamericainc.com 09/26/2019

This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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# **Definitions/Glossary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010 Job ID: 140-16315-1

### Qualifiers

LCMS	
Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
В	Compound was found in the blank and sample.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
E	Result exceeded calibration range.
1	Value is EMPC (estimated maximum possible concentration).
Χ	Surrogate is outside control limits

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

### **Method Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
8321A	HFPO-DA	SW846	TAL DEN
8321A	PFOA and PFOS	SW846	TAL DEN
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL DEN
None	Leaching Procedure for Condensate	TAL SOP	TAL DEN
None	Leaching Procedure for XAD	TAL SOP	TAL DEN
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL DEN
Split	Source Air Split	None	TAL SAC

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### **Laboratory References:**

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## **Sample Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Lab Sample ID **Client Sample ID** Matrix Collected Received Asset ID 08/08/19 00:00 08/13/19 07:30 140-16315-1 K-1727,1728 BLDG J-26 INLET R1 M0010 FH Air 140-16315-2 08/08/19 00:00 08/13/19 07:30 K-1729,1730,1732 BLDG J-26 INLET R1 M0010 Air 140-16315-3 08/08/19 00:00 08/13/19 07:30 K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3 Air CONDENSATE 08/08/19 00:00 08/13/19 07:30 140-16315-4 Air K-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

### Job Narrative 140-16315-1

#### Sample Receipt

The samples were received on August 13, 2019 at 7:30 AM in good condition and properly preserved. The temperatures of the 2 coolers at receipt time were 2.6° C and 3.0° C.

#### **Quality Control and Data Interpretation**

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

#### Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

#### **LCMS**

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: K-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16315-2) and K-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16315-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 537 (modified): The method blank for preparation batch 320-314937 and 320-314939 and analytical batch 320-316701 contained HFPO-DA above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3 CONDENSATE (140-16315-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration. Associated samples were not re-extracted and/or re-analyzed due to limited sample volume.

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3 CONDENSATE (140-16315-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. Associated samples were not re-extracted and/or re-analyzed due to limited sample volume.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for several analytes: K-1727,1728 BLDG J-26 INLET R1 M0010 FH (140-16315-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Method 537 (modified): The method blank for preparation batch 320-315296, 320-315962 and 320-316584 and analytical batch 320-318520 contained several analytes above the reporting limit (RL). Associated samples were not re-extracted and/or re-analyzed due to limited sample volume

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-315296, 320-315962 and 320-316584 and analytical batch 320-318520 recovered outside control limits for several analytes. These analytes were biased high in the LCS. Associated samples were not re-extracted and/or re-analyzed due to limited sample volume.

Method 537 (modified): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method 537 (modified): Due to Isotope Dilution Analyte (IDA) recoveries are out of the method recommended limit of several analytes in the original extract due to matrix interference, the following sample required a 100x dilution: K-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16315-2) and K-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16315-4) Internal standard and isotope dilution analyte solutions were refortified into the extract after dilution so quantitation could be performed.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). K-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16315-2)

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Comments

Samples associated with this analytical batch were originally analyzed with an "E" flag to indicate that the HFPO-DA exceeded the calibration curve of the method. Project specific calculations are provided as an addendum to this narrative.

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Breakthrough from the Modified Method 0010 Sampling Train for PFAS compounds will be measured by the percentage (%) concentration of a specific PFAS target analyte determined to be present in the Breakthrough XAD-2 resin module of a test run. If the concentration of a specific PFAS compound is  $\leq$ 30% of the sum of the concentrations determined for the other three (3) fractions of the sampling train, then sampling breakthrough is determined not to have occurred. Also, no breakthrough will be determined to have occurred if < 250  $\mu$ g of a target analyte is collected on all fractions of a sampling train. Breakthrough the sampling train implies that sample loss through the train has occurred and results in a negative bias to the sample results.



### Chemours Building J-26 Inlet Test Analytical Report TestAmerica Job No. 140-16315-1 September 26, 2019

The following samples exceeded the Method 8321A calibration range for HFPO-DA and required that dilution of the extracts be performed:

- BLDG J-26 INLET R1 M0010 FH
- BLDG J-26 INLET R1 M0010 BH
- BLDG J-26 INLET R1 M0010 Breakthrough XAD

The original analysis concentration which displays the "E" flag is provided with the data set indicating that the value provided is estimated. The  $^{13}$ C<sub>3</sub> – HFPO-DA isotope dilution internal standard (IDA) recovery percentage (%) however, is provided with this analysis run.

A second analysis concentration displays an accurate concentration of the HFPO-DA in the diluted sample extract, but the value is uncorrected for the IDA recovery percentage from the original matrix. The recovery percentage presented with the second concentration represents a post-spike of IDA to benchmark the instrument quantification of native HFPO-DA.

Final recovery-corrected concentrations of the native HFPO-DA are provided by calculation using the original recovery value of the IDA and the diluted extract values of the native HFPO-DA. The final concentrations are calculated as follows:

BLDG J-26 INLET R1 M0010 FH

$$(15500 \, ug) \times \left(\frac{68}{57}\right) = 18491 \, ug$$

BLDG J-26 INLET R1 M0010 BH

$$(71400 \, ug) \times \left(\frac{75}{31}\right) = 172742 \, ug$$

BLDG J-26 INLET R1 M0010 Breakthrough XAD

$$(7650 \, ug) \times \left(\frac{67}{23}\right) = 22285 \, ug$$

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

### LCMS

<b>Prep Batch</b>	ո։ 314937
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3 - DL	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
MB 320-314937/1-B	Method Blank	Total/NA	Air	None	
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	None	

### Cleanup Batch: 314939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3 - DL	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	Preparation	314937
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	Preparation	314937
MB 320-314937/1-B	Method Blank	Total/NA	Air	Preparation	314937
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	Preparation	314937

### **Prep Batch: 315296**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2 - DL	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	
140-16315-4 - DL	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
MB 320-315296/1-C	Method Blank	Total/NA	Air	None	
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	None	

### **Prep Batch: 315439**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1 - DL	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	
MB 320-315439/1-C	Method Blank	Total/NA	Air	None	
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	None	

### Cleanup Batch: 315674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1 - DL	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	315439
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	315439
MB 320-315439/1-C	Method Blank	Total/NA	Air	Split	315439
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	Split	315439

### Cleanup Batch: 315962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2 - DL	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	315296
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	315296
140-16315-4 - DL	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	315296
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	315296
MB 320-315296/1-C	Method Blank	Total/NA	Air	Split	315296
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	Split	315296

### Cleanup Batch: 316580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1 - DL	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Preparation	315674
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Preparation	315674
MB 320-315439/1-C	Method Blank	Total/NA	Air	Preparation	315674
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	Preparation	315674

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

### LCMS

Cleanup	<b>Batch:</b>	316584
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L	₋ab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
1	140-16315-2 - DL	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Preparation	315962
1	140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Preparation	315962
1	140-16315-4 - DL	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Preparation	315962
1	140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Preparation	315962
1	MB 320-315296/1-C	Method Blank	Total/NA	Air	Preparation	315962
L	_CS 320-315296/2-C	Lab Control Sample	Total/NA	Air	Preparation	315962

### **Analysis Batch: 316701**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	314939
MB 320-314937/1-B	Method Blank	Total/NA	Air	537 (modified)	314939
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	314939

### **Analysis Batch: 317379**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	537 (modified)	316580
MB 320-315439/1-C	Method Blank	Total/NA	Air	537 (modified)	316580
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	316580

### Cleanup Batch: 317409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3 - DL	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	Dilution	314939

### Cleanup Batch: 317526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1 - DL	K-1727.1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Dilution	316580

### **Analysis Batch: 317771**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1 - DL	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	537 (modified)	317526

### **Analysis Batch: 317903**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3 - DL	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	317409

### **Analysis Batch: 318520**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-315296/1-C	Method Blank	Total/NA	Air	537 (modified)	316584
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	316584

### Cleanup Batch: 325006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2 - DL	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Dilution	316584
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Dilution	316584
140-16315-4 - DL	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Dilution	316584
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Dilution	316584

### **Analysis Batch: 325225**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	537 (modified)	325006
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	537 (modified)	325006

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

LCMS					
Analysis Batch: 3253	385				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2 - DL	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	537 (modified)	325006
140-16315-4 - DL	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	537 (modified)	325006
Analysis Batch: 464	589				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-464589/13	Lab Control Sample	Total/NA	Air	8321A	- Top Baton
Prep Batch: 467698					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
MB 280-467698/1-B	Method Blank	Total/NA	Air	None	
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	None	
Prep Batch: 467772					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	
MB 280-467772/1-B	Method Blank	Total/NA	Air	None	
LCS 280-467772/2-B	Lab Control Sample	Total/NA	Air	None	
_ Cleanup Batch: 4679	919				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	467772
MB 280-467772/1-B	Method Blank	Total/NA	Air	Split	467772
LCS 280-467772/2-B	Lab Control Sample	Total/NA	Air	Split	467772
Cleanup Batch: 4679	069				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	467698
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	467698
MB 280-467698/1-B	Method Blank	Total/NA	Air	Split	467698
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	Split	467698
<b>Prep Batch: 468393</b>					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
MB 280-468393/1-B	Method Blank	Total/NA	Air	None	
LCS 280-468393/2-B	Lab Control Sample	Total/NA	Air	None	
Cleanup Batch: 4683	394				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	Split	468393
MB 280-468393/1-B	Method Blank	Total/NA	Air	Split	468393
LCS 280-468393/2-B	Lab Control Sample	Total/NA	Air	Split	468393
Analysis Batch: 4684	463				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	8321A	467919
MB 280-467772/1-B	Method Blank	Total/NA	Air	8321A	467919
1 00 000 10==0/0 0					

467919

8321A

Job ID: 140-16315-1

Total/NA

Air

LCS 280-467772/2-B

Lab Control Sample

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

### LCMS

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	8321A	467969
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	8321A	467969
MB 280-467698/1-B	Method Blank	Total/NA	Air	8321A	467969
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	8321A	467969

### **Prep Batch: 468558**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727.1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	

### Cleanup Batch: 468607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	468558

### **Prep Batch: 468608**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	

### Cleanup Batch: 468610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	468608
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	468608

### **Analysis Batch: 468788**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16315-1	K-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	8321A	468607
140-16315-2	K-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	8321A	468610
140-16315-3	K-1731 BLDG J-26 INLET R1 M0010 IMP 1,2&3	Total/NA	Air	8321A	468394
140-16315-4	K-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	8321A	468610
MB 280-468393/1-B	Method Blank	Total/NA	Air	8321A	468394
LCS 280-468393/2-B	Lab Control Sample	Total/NA	Air	8321A	468394

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: K-1727,1728 BLDG J-26 INLET R1 M0010 FH Lab Sample ID: 140-16315-1

Date Collected: 08/08/19 00:00 Lab Sample 1D. 140-16319-1

Date Received: 08/13/19 07:30 Sample Container: Air Train

Method: 537 (modified) - Fluo Analyte	•	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Perfluoropentanoic acid (PFPeA)	646		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorohexanoic acid (PFHxA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluoroheptanoic acid (PFHpA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorooctanoic acid (PFOA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorononanoic acid (PFNA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorodecanoic acid (PFDA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluoroundecanoic acid (PFUnA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorododecanoic acid (PFDoA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorotridecanoic acid (PFTriA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorotetradecanoic acid (PFTeA)	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorobutanesulfonic acid (PFBS)	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorohexanesulfonic acid (PFHxS)	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorodecanesulfonic acid (PFDS)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorooctanesulfonic acid (PFOS)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorooctanesulfonamide (FOSA)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluoropentanesulfonic acid (PFPeS)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
Perfluorononanesulfonic acid (PFNS)	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		50.0		ng/Sample			08/22/19 17:25	10
4:2 FTS	ND		50.0		ng/Sample		08/15/19 15:20	08/22/19 17:25	10
6:2 FTS	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
3:2 FTS	ND		50.0	49.0	ng/Sample		08/15/19 15:20	08/22/19 17:25	10
sotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	27		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C5 PFPeA	64		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C2 PFHxA	24	*	25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C4 PFHpA	52		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C4 PFOA	52		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C5 PFNA	50		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C2 PFDA	18	*	25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C2 PFUnA	36		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C2 PFDoA	15	*	25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C2 PFTeDA	26		25 - 150				08/15/19 15:20	08/22/19 17:25	10
1802 PFHxS	49		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13C4 PFOS	36		25 - 150				08/15/19 15:20	08/22/19 17:25	10
13-NMeFOSAA	75		25 - 150					08/22/19 17:25	10
15-NEtFOSAA	64		25 - 150					08/22/19 17:25	10
12-4:2 FTS	35		25 - 150					08/22/19 17:25	10
12-6:2 FTS	62		25 - 150					08/22/19 17:25	10
M2-8:2 FTS	28		25 - 150					08/22/19 17:25	10
Method: 537 (modified) - Fluo					11-24	_	<b>D</b>	A1 .	D.: -
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa

Client: Chemours Company FC, LLC The Job ID: 140-16315-1
Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: K-1727,1728 BLDG J-26 INLET R1 M0010 FH

Lab Sample ID: 140-16315-1

Lab Sample ID: 140-16315-2

Date Collected: 08/08/19 00:00 Date Received: 08/13/19 07:30 Matrix: Air

Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150				08/15/19 15:20	08/23/19 22:05	1
Method: 8321A - PFOA an	d PFOS								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	8760	E	5.00	0.540	ug/Sample	_	08/15/19 15:20	08/22/19 08:23	50
HFPO-DA	15500		100	10.8	ug/Sample		08/15/19 15:20	08/26/19 09:24	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	57	D	50 - 200				08/15/19 15:20	08/22/19 08:23	50
13C3 HFPO-DA	68	D	50 - 200				08/15/19 15:20	08/26/19 09:24	10

Client Sample ID: K-1729,1730,1732 BLDG J-26 INLET R1

M0010 BH

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Method: 537 (modified) - Fluor Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	25900		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorohexanoic acid (PFHxA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluoroheptanoic acid (PFHpA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorooctanoic acid (PFOA)	67100	ΙB	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorononanoic acid (PFNA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorodecanoic acid (PFDA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluoroundecanoic acid (PFUnA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorododecanoic acid (PFDoA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorotridecanoic acid (PFTriA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorooctanesulfonamide (FOSA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Perfluorononanesulfonic acid (PFNS)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
4:2 FTS	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
6:2 FTS	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
8:2 FTS	ND		10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	101		25 - 150				08/15/19 12:35	09/21/19 04:17	1
13C5 PFPeA	93		25 - 150				08/15/19 12:35	09/21/19 04:17	1
13C2 PFHxA	92		25 - 150				08/15/19 12:35	09/21/19 04:17	1
13C4 PFHpA	96		25 - 150				08/15/19 12:35	09/21/19 04:17	1

Eurofins TestAmerica, Knoxville

Client: Chemours Company FC, LLC The Job ID: 140-16315-1

Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: K-1729,1730,1732 BLDG J-26 INLET R1

M0010 BH

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	104	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C5 PFNA	100	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C2 PFDA	101	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C2 PFUnA	108	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C2 PFDoA	104	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C2 PFTeDA	107	25 - 150	08/15/19 12:35	09/21/19 04:17	1
1802 PFHxS	98	25 - 150	08/15/19 12:35	09/21/19 04:17	1
13C4 PFOS	102	25 - 150	08/15/19 12:35	09/21/19 04:17	1
d3-NMeFOSAA	100	25 - 150	08/15/19 12:35	09/21/19 04:17	1
d5-NEtFOSAA	104	25 - 150	08/15/19 12:35	09/21/19 04:17	1
M2-4:2 FTS	95	25 - 150	08/15/19 12:35	09/21/19 04:17	1
M2-6:2 FTS	104	25 - 150	08/15/19 12:35	09/21/19 04:17	1
M2-8:2 FTS	103	25 - 150	08/15/19 12:35	09/21/19 04:17	1

Method: 537 (modified) - Fluo	rinated Alky	/I Substan	ces - DL						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	10800000	В	100000	98000	ng/Sample		08/15/19 12:35	09/22/19 11:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	72		25 - 150				08/15/19 12:35	09/22/19 11:25	1

Method: 8321A - PFOA and Pl	FOS								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	36300	E	12.5	2.50	ug/Sample		08/15/19 12:35	08/22/19 08:46	50
HFPO-DA	71400		1250	250	ug/Sample		08/15/19 12:35	08/26/19 09:28	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	31	X D	50 - 200				08/15/19 12:35	08/22/19 08:46	50
13C3 HFPO-DA	75	D	50 - 200				08/15/19 12:35	08/26/19 09:28	10

Client Sample ID: K-1731 BLDG J-26 INLET R1 M0010 IMP

Lab Sample ID: 140-16315-3

1,2&3 CONDENSATE

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result Qu	ıalifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	11700	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorohexanoic acid (PFHxA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluoroheptanoic acid (PFHpA)	133	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorooctanoic acid (PFOA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorononanoic acid (PFNA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorodecanoic acid (PFDA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluoroundecanoic acid (PFUnA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorododecanoic acid (PFDoA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorotridecanoic acid (PFTriA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorotetradecanoic acid (PFTeA)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorobutanesulfonic acid (PFBS)	ND	50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100

Eurofins TestAmerica, Knoxville

Lab Sample ID: 140-16315-2

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010 Job ID: 140-16315-1

#### Client Sample ID: K-1731 BLDG J-26 INLET R1 M0010 IMP Lab Sample ID: 140-16315-3

1,2&3 CONDENSATE

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 **Sample Container: Air Train** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorohexanesulfonic acid (PFHxS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Perfluorodecanesulfonic acid (PFDS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	10
Perfluorooctanesulfonic acid (PFOS)	ND		50.0		ng/Sample		08/14/19 06:50	08/20/19 15:56	10
Perfluorooctanesulfonamide (FOSA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	10
Perfluoropentanesulfonic acid	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
(PFPeS) Perfluorononanesulfonic acid (PFNS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	10
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
4:2 FTS `	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
6:2 FTS	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
8:2 FTS	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/20/19 15:56	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	123		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C5 PFPeA	34		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C2 PFHxA	14	*	25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C4 PFHpA	57		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C4 PFOA	91		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C5 PFNA	130		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C2 PFDA	141		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C2 PFUnA	148		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C2 PFDoA	130		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C2 PFTeDA	120		25 - 150				08/14/19 06:50	08/20/19 15:56	100
1802 PFHxS	53		25 - 150				08/14/19 06:50	08/20/19 15:56	100
13C4 PFOS	104		25 - 150				08/14/19 06:50	08/20/19 15:56	100
d3-NMeFOSAA	179	*	25 - 150				08/14/19 06:50	08/20/19 15:56	100
d5-NEtFOSAA	196	*	25 - 150				08/14/19 06:50	08/20/19 15:56	100
M2-4:2 FTS	61		25 - 150				08/14/19 06:50	08/20/19 15:56	100
M2-6:2 FTS	106		25 - 150				08/14/19 06:50	08/20/19 15:56	100
M2-8:2 FTS	107		25 - 150				08/14/19 06:50	08/20/19 15:56	100
Method: 537 (modified) - Fluor									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Perfluorobutanoic acid (PFBA)	1050000		5000	4900	ng/Sample		08/14/19 06:50		
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C4 PFBA	88		25 - 150				08/14/19 06:50	08/25/19 00:10	
Method: 8321A - HFPO-DA	Daniil.	Ouglië	DI	MD	llm:4	_	Duon anad	A mal:	D:: F-
Analyte		Qualifier	RL	MDL		_ <b>D</b>	Prepared	Analyzed 08/26/19 09:21	Dil Fac
HFPO-DA	222000		1260	04.5	ug/Sample		08/14/19 06:50	00/20/19 09:21	50
Surrogate	%Recovery		Limits				<b>Prepared</b> 08/14/19 06:50	Analyzed 08/26/19 09:21	Dil Fa
13C3 HFPO-DA	400		50 - 200					00/06/40 00:04	

Client: Chemours Company FC, LLC The Job ID: 140-16315-1 Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: K-1733 BLDG J-26 INLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluoropentanoic acid (PFPeA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorohexanoic acid (PFHxA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	•
Perfluoroheptanoic acid (PFHpA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	•
Perfluorooctanoic acid (PFOA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorononanoic acid (PFNA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorodecanoic acid (PFDA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluoroundecanoic acid (PFUnA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorododecanoic acid (PFDoA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorotridecanoic acid (PFTriA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorotetradecanoic acid (PFTeA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorobutanesulfonic acid (PFBS)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorohexanesulfonic acid (PFHxS)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluoroheptanesulfonic Acid	ND	10000		ng/Sample		08/15/19 12:35	09/21/19 04:25	
PFHpS) Perfluorodecanesulfonic acid (PFDS)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
Perfluorooctanesulfonic acid (PFOS)	ND	10000		ng/Sample			09/21/19 04:25	
Perfluorooctanesulfonamide (FOSA)	ND	10000		ng/Sample			09/21/19 04:25	
Perfluoropentanesulfonic acid	ND	10000		ng/Sample			09/21/19 04:25	
PFPeS)								
erfluorononanesulfonic acid (PFNS)	ND	10000		ng/Sample			09/21/19 04:25	
-methylperfluorooctanesulfonamidoa etic acid (NMeFOSAA)	ND	10000		ng/Sample			09/21/19 04:25	•
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	•
:2 FTS	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	•
:2 FTS	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
:2 FTS	ND	10000	9800	ng/Sample		08/15/19 12:35	09/21/19 04:25	
sotope Dilution	%Recovery Qualifier	Limits				Prepared	Analyzed	Dil Fa
3C8 FOSA	102	25 - 150					09/21/19 04:25	
3C5 PFPeA	96	25 - 150					09/21/19 04:25	
3C2 PFHxA	103	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C4 PFHpA	99	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C4 PFOA	100	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C5 PFNA	99	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C2 PFDA	104	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C2 PFUnA	106	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C2 PFDoA	112	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C2 PFTeDA	104	25 - 150				08/15/19 12:35	09/21/19 04:25	
8O2 PFHxS	98	25 - 150				08/15/19 12:35	09/21/19 04:25	
3C4 PFOS	100	25 - 150				08/15/19 12:35	09/21/19 04:25	
3-NMeFOSAA	99	25 - 150				08/15/19 12:35	09/21/19 04:25	
5-NEtFOSAA	104	25 - 150				08/15/19 12:35	09/21/19 04:25	
12-4:2 FTS	100	25 - 150				08/15/19 12:35	09/21/19 04:25	
12-6:2 FTS	111	25 - 150				08/15/19 12:35	09/21/19 04:25	
12-8:2 FTS	103	25 - 150					09/21/19 04:25	

Lab Sample ID: 140-16315-4

Client: Chemours Company FC, LLC The Job ID: 140-16315-1

Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: K-1733 BLDG J-26 INLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	7820000	В	100000	98000	ng/Sample		08/15/19 12:35	09/22/19 11:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	76		25 - 150				08/15/19 12:35	09/22/19 11:35	1
Method: 8321A - PFOA and F	PFOS								
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte HFPO-DA			RL			D		Analyzed 08/22/19 08:49	Dil Fac
Analyte HFPO-DA HFPO-DA	Result			2.00	Unit ug/Sample ug/Sample	_ <u>D</u>	08/15/19 12:35	08/22/19 08:49	
HFPO-DA	Result 8270	E	10.0	2.00	ug/Sample	<u>D</u>	08/15/19 12:35	08/22/19 08:49	50
HFPO-DA HFPO-DA	Result 8270 7650 %Recovery	E	10.0	2.00	ug/Sample	_ <u>D</u>	08/15/19 12:35 08/15/19 12:35	08/22/19 08:49 08/26/19 09:31 <i>Analyzed</i>	50

Lab Sample ID: 140-16315-4

### **Default Detection Limits**

Client: Chemours Company FC, LLC The

Job ID: 140-16315-1 Project/Site: Building J-26 Inlet - Method 0010

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Prep: None** 

Analyte	RL	MDL	Units	
4:2 FTS	0.500	0.490	ng/Sample	
6:2 FTS	0.500	0.490	ng/Sample	
8:2 FTS	0.500	0.490	ng/Sample	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample	
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample	
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample	
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample	
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample	
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample	
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample	
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample	
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample	
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample	
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample	
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample	
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample	
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample	
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample	
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample	
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample	
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample	

Method: 8321A - HFPO-DA

Prep: None

ſ	Analyte	RL	MDL	Units
	HFPO-DA	0.00250	0.00128	ug/Sample

Method: 8321A - PFOA and PFOS

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.0250	0.00270	ug/Sample
HFPO-DA	0.100	0.0200	ug/Sample



### **ANALYTICAL REPORT**

Job Number: 140-16316-1

Job Description: Building J-26 Outlet - M0010

Contract Number: LBIO-67048

For:

Chemours Company FC, LLC The c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Lowwelf Ackins

Approved for release Courtney M Adkins Project Manager I

Courtney M Adkins, Project Manager I 5815 Middlebrook Pike, Knoxville, TN, 37921 (865)291-3000 courtney.adkins@testamericainc.com 09/26/2019

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# **Definitions/Glossary**

Client: Chemours Company FC, LLC The Job ID: 140-16316-1 Project/Site: Building J-26 Outlet - M0010

### Qualifiers

		N/A	0
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Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
В	Compound was found in the blank and sample.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
1	Value is EMPC (estimated maximum possible concentration).
X	Surrogate is outside control limits

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

### **Method Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
8321A	HFPO-DA	SW846	TAL DEN
8321A	PFOA and PFOS	SW846	TAL DEN
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL DEN
None	Leaching Procedure for Condensate	TAL SOP	TAL DEN
None	Leaching Procedure for XAD	TAL SOP	TAL DEN
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL DEN
Split	Source Air Split	None	TAL SAC

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### **Laboratory References:**

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

### **Sample Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

Lab Sample ID **Client Sample ID** Matrix Collected Received Asset ID Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH Air 08/08/19 00:00 08/13/19 07:30 140-16316-1 140-16316-2 Air 08/08/19 00:00 08/13/19 07:30 Q-1729,1730,1732 BLDG J-26 OUTLET R1 140-16316-3 Air 08/08/19 00:00 08/13/19 07:30 Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,2&3 CONDENSATE Air 08/08/19 00:00 08/13/19 07:30 140-16316-4 Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

### Job Narrative 140-16316-1

#### Sample Receipt

The samples were received on August 13, 2019 at 7:30 AM in good condition and properly preserved. The temperatures of the 2 coolers at receipt time were 2.6° C and 3.0° C.

#### **Quality Control and Data Interpretation**

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

#### Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

#### **LCMS**

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16316-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 537 (modified): The method blank for preparation batch 320-314937 and 320-314939 and analytical batch 320-316701 contained HFPO-DA above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C2 PFTeDA and 13C2 PFDoA: Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH (140-16316-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. All detection limits are below the lower calibration.

Method 537 (modified), EPA 537 (Mod), EPA 537(Mod): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Method 537 (modified): The method blank for preparation batch 320-315296, 320-315962 and 320-316584 and analytical batch 320-318520 contained several analytes above the reporting limit (RL). Associated samples were not re-extracted and/or re-analyzed due to limited sample volume

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-315296, 320-315962 and 320-316584 and analytical batch 320-318520 recovered outside control limits for several analytes. These analytes were biased high in the LCS. Associated samples were not re-extracted and/or re-analyzed due to limited sample volume.

Method(s) 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.

Q-1729,1730,1732 BLDG J-26 OUTLET R1 M0010 BH (140-16316-2) and Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16316-4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

### LCMS

<b>Prep Ba</b>	tch: 3	14937
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	None	
MB 320-314937/1-B	Method Blank	Total/NA	Air	None	
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	None	

### Cleanup Batch: 314939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	Preparation	314937
MB 320-314937/1-B	Method Blank	Total/NA	Air	Preparation	314937
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	Preparation	314937

### **Prep Batch: 315296**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	None	<u> </u>
140-16316-2 - DL	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00°	Total/NA	Air	None	
140-16316-4 - DL	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
MB 320-315296/1-C	Method Blank	Total/NA	Air	None	
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	None	

### **Prep Batch: 315439**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	None	<u> </u>
MB 320-315439/1-C	Method Blank	Total/NA	Air	None	
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	None	

### Cleanup Batch: 315674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Split	315439
MB 320-315439/1-C	Method Blank	Total/NA	Air	Split	315439
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	Split	315439

### Cleanup Batch: 315962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-2 - DL	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	Split	315296
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00°	Total/NA	Air	Split	315296
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	315296
140-16316-4 - DL	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	315296
MB 320-315296/1-C	Method Blank	Total/NA	Air	Split	315296
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	Split	315296

### Cleanup Batch: 316580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Preparation	315674
MB 320-315439/1-C	Method Blank	Total/NA	Air	Preparation	315674
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	Preparation	315674

### Cleanup Batch: 316584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method P	rep Batch
140-16316-2 - DL	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	Preparation	315962
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00°	Total/NA	Air	Preparation	315962
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Preparation	315962

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

### LCMS (Continued)

Cleanup	Batch: 316584 (	(Continued)
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-4 - DL	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Preparation	315962
MB 320-315296/1-C	Method Blank	Total/NA	Air	Preparation	315962
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	Preparation	315962

### **Analysis Batch: 316701**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-314937/1-B	Method Blank	Total/NA	Air	537 (modified)	314939
LCS 320-314937/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	314939

### **Analysis Batch: 317071**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	537 (modified)	314939

### **Analysis Batch: 317379**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	537 (modified)	316580
MB 320-315439/1-C	Method Blank	Total/NA	Air	537 (modified)	316580
LCS 320-315439/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	316580

### Cleanup Batch: 317409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	Dilution	314939

### **Analysis Batch: 317496**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	537 (modified)	317409

### **Analysis Batch: 318520**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-315296/1-C	Method Blank	Total/NA	Air	537 (modified)	316584
LCS 320-315296/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	316584

### **Analysis Batch: 321502**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Pr	ep Batch
140-16316-2 - DL	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	537 (modified)	316584
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00°	Total/NA	Air	537 (modified)	316584
140-16316-4 - DL	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	537 (modified)	316584
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	537 (modified)	316584

### **Analysis Batch: 464589**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-464589/13	Lab Control Sample	Total/NA	Air	8321A	

### **Prep Batch: 467533**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	None	
MB 280-467533/1-A	Method Blank	Total/NA	Air	None	
LCS 280-467533/2-A	Lab Control Sample	Total/NA	Air	None	

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

LCMS

D	Datala	467698
Pron	Ratch:	4h/hyx

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	None	
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
MB 280-467698/1-B	Method Blank	Total/NA	Air	None	
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	None	

### **Prep Batch: 467772**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	None	<u> </u>
MB 280-467772/1-B	Method Blank	Total/NA	Air	None	
LCS 280-467772/2-B	Lab Control Sample	Total/NA	Air	None	

### Cleanup Batch: 467919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Split	467772
MB 280-467772/1-B	Method Blank	Total/NA	Air	Split	467772
LCS 280-467772/2-B	Lab Control Sample	Total/NA	Air	Split	467772

### Cleanup Batch: 467969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	Split	467698
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	467698
MB 280-467698/1-B	Method Blank	Total/NA	Air	Split	467698
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	Split	467698

### **Analysis Batch: 468068**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-3	Q-1731 BLDG J-26 OUTLET R1 M0010 IMP 1,28	Total/NA	Air	8321A	467533
MB 280-467533/1-A	Method Blank	Total/NA	Air	8321A	467533
LCS 280-467533/2-A	Lab Control Sample	Total/NA	Air	8321A	467533

### **Analysis Batch: 468463**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-1	Q-1727,1728 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	8321A	467919
MB 280-467772/1-B	Method Blank	Total/NA	Air	8321A	467919
LCS 280-467772/2-B	Lab Control Sample	Total/NA	Air	8321A	467919

### Analysis Batch: 468464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16316-2	Q-1729,1730,1732 BLDG J-26 OUTLET R1 M00	Total/NA	Air	8321A	467969
140-16316-4	Q-1733 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	8321A	467969
MB 280-467698/1-B	Method Blank	Total/NA	Air	8321A	467969
LCS 280-467698/2-B	Lab Control Sample	Total/NA	Air	8321A	467969

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

Job ID: 140-16316-1

### Client Sample ID: Q-1727,1728 BLDG J-26 OUTLET R1 M0010

FΗ

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 **Sample Container: Air Train** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	6310		49.6	48.6	ng/Sample	_	08/15/19 15:20	08/22/19 17:33	100
Perfluoropentanoic acid (PFPeA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorohexanoic acid (PFHxA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluoroheptanoic acid (PFHpA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorooctanoic acid (PFOA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorononanoic acid (PFNA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorodecanoic acid (PFDA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluoroundecanoic acid (PFUnA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorododecanoic acid (PFDoA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorotridecanoic acid (PFTriA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorotetradecanoic acid (PFTeA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorobutanesulfonic acid (PFBS)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorohexanesulfonic acid (PFHxS)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluoroheptanesulfonic Acid	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
(PFHpS) Perfluorodecanesulfonic acid (PFDS)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Perfluorooctanesulfonic acid (PFOS)	ND		49.6		ng/Sample			08/22/19 17:33	100
Perfluorooctanesulfonamide (FOSA)	ND		49.6		ng/Sample			08/22/19 17:33	100
Perfluoropentanesulfonic acid	ND		49.6		ng/Sample			08/22/19 17:33	100
(PFPeS)									
Perfluorononanesulfonic acid (PFNS)	ND		49.6		ng/Sample			08/22/19 17:33	100
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		49.6		ng/Sample		08/15/19 15:20	08/22/19 17:33	100
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
4:2 FTS	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
6:2 FTS	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
8:2 FTS	ND		49.6	48.6	ng/Sample		08/15/19 15:20	08/22/19 17:33	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	46		25 - 150				08/15/19 15:20	08/22/19 17:33	100
13C4 PFBA	73		25 - 150				08/15/19 15:20	08/22/19 17:33	100
13C5 PFPeA	83		25 - 150				08/15/19 15:20	08/22/19 17:33	100
13C2 PFHxA	74		25 - 150				08/15/19 15:20	08/22/19 17:33	100
13C4 PFHpA	98		25 - 150				08/15/19 15:20	08/22/19 17:33	100
13C4 PFOA	88		25 - 150					08/22/19 17:33	100
13C5 PFNA	85		25 - 150					08/22/19 17:33	100
13C2 PFDA	41		25 - 150					08/22/19 17:33	100
13C2 PFUnA	25		25 - 150					08/22/19 17:33	100
13C2 PFDoA	19	*	25 - 150					08/22/19 17:33	100
13C2 PFTeDA	12		25 - 150					08/22/19 17:33	100
1802 PFHxS	95		25 - 150 25 - 150					08/22/19 17:33	100
13C4 PFOS	82		25 - 150 25 - 150					08/22/19 17:33	100
d3-NMeFOSAA	42		25 - 150 25 - 150					08/22/19 17:33	100
d5-NEtFOSAA	42		25 - 150 25 - 150					08/22/19 17:33	100
M2-4:2 FTS	86		25 - 150 25 - 150					08/22/19 17:33	100
M2-4.2 FTS M2-6:2 FTS	80		25 - 150 25 - 150					08/22/19 17:33	100
IVIZ-U.Z I I U	60		20-100				00/10/19 10.20	00/22/13 11.33	100

Lab Sample ID: 140-16316-1

Client: Chemours Company FC, LLC The Job ID: 140-16316-1

Project/Site: Building J-26 Outlet - M0010

Client Sample ID: Q-1727,1728 BLDG J-26 OUTLET R1 M0010

FΗ

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Method:	8321A -	<b>PFOA</b>	and PFOS
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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	180		1.26	0.136	ug/Sample		08/15/19 15:20	08/22/19 08:26	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	68	D	50 - 200				08/15/19 15:20	08/22/19 08:26	10

Client Sample ID: Q-1729,1730,1732 BLDG J-26 OUTLET R1 Lab Sample ID: 140-16316-2

M0010 BH

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	34.0		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorohexanoic acid (PFHxA)	32.5	*	5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluoroheptanoic acid (PFHpA)	36.9	*	5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorooctanoic acid (PFOA)	11.4	<b>I</b> *	5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorononanoic acid (PFNA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorodecanoic acid (PFDA)	5.53		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluoroundecanoic acid (PFUnA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorododecanoic acid (PFDoA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorotridecanoic acid (PFTriA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorotetradecanoic acid (PFTeA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorobutanesulfonic acid (PFBS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorohexanesulfonic acid (PFHxS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorodecanesulfonic acid (PFDS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorooctanesulfonic acid (PFOS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorooctanesulfonamide (FOSA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluoropentanesulfonic acid (PFPeS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Perfluorononanesulfonic acid (PFNS)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		5.02		ng/Sample		08/15/19 12:35	09/06/19 15:09	10
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
4:2 FTS	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
6:2 FTS	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
8:2 FTS	ND		5.02	4.92	ng/Sample		08/15/19 12:35	09/06/19 15:09	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	26		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C5 PFPeA	89		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C2 PFHxA	88		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C4 PFHpA	104		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C4 PFOA	102		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C5 PFNA	100		25 - 150				08/15/19 12:35	09/06/19 15:09	10
13C2 PFDA	93		25 - 150				08/15/19 12:35	09/06/19 15:09	10

Lab Sample ID: 140-16316-1

Client: Chemours Company FC, LLC The Job ID: 140-16316-1
Project/Site: Building J-26 Outlet - M0010

Client Sample ID: Q-1729,1730,1732 BLDG J-26 OUTLET R1 Lab Sample ID: 140-16316-2

M0010 BH

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	93	25 - 150	08/15/19 12:35	09/06/19 15:09	10
13C2 PFDoA	86	25 - 150	08/15/19 12:35	09/06/19 15:09	10
13C2 PFTeDA	86	25 - 150	08/15/19 12:35	09/06/19 15:09	10
1802 PFHxS	97	25 - 150	08/15/19 12:35	09/06/19 15:09	10
13C4 PFOS	85	25 - 150	08/15/19 12:35	09/06/19 15:09	10
d3-NMeFOSAA	92	25 - 150	08/15/19 12:35	09/06/19 15:09	10
d5-NEtFOSAA	104	25 - 150	08/15/19 12:35	09/06/19 15:09	10
M2-4:2 FTS	97	25 - 150	08/15/19 12:35	09/06/19 15:09	10
M2-6:2 FTS	106	25 - 150	08/15/19 12:35	09/06/19 15:09	10
M2-8:2 FTS	95	25 - 150	08/15/19 12:35	09/06/19 15:09	10

Method: 537 (modified) - Fluorinated Alkyl Substances - DL											
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
	Perfluorobutanoic acid (PFBA)	3850	B *	10.0	9.84	ng/Sample		08/15/19 12:35	09/06/19 14:52	20	
	Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
	13C4 PFBA	80		25 - 150				08/15/19 12:35	09/06/19 14:52	20	

Method: 8321A - PFOA and Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	28.7		2.75	0.550	ug/Sample		08/15/19 12:35	08/22/19 08:52	10
Surrogate 13C3 HFPO-DA	%Recovery 51		Limits 50 - 200				Prepared 08/15/19 12:35	Analyzed 08/22/19 08:52	Dil Fac

Client Sample ID: Q-1731 BLDG J-26 OUTLET R1 M0010 IMP

Lab Sample ID: 140-16316-3

1,2&3 CONDENSATE

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	22500		250	245	ng/Sample		08/14/19 06:50	08/23/19 11:53	1
Perfluoropentanoic acid (PFPeA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorohexanoic acid (PFHxA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluoroheptanoic acid (PFHpA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorooctanoic acid (PFOA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorononanoic acid (PFNA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorodecanoic acid (PFDA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluoroundecanoic acid (PFUnA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorododecanoic acid (PFDoA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorotridecanoic acid (PFTriA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorotetradecanoic acid (PFTeA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorobutanesulfonic acid (PFBS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorohexanesulfonic acid (PFHxS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluoroheptanesulfonic Acid (PFHpS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorodecanesulfonic acid (PFDS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100

Eurofins TestAmerica, Knoxville

Client: Chemours Company FC, LLC The Job ID: 140-16316-1
Project/Site: Building J-26 Outlet - M0010

Client Sample ID: Q-1731 BLDG J-26 OUTLET R1 M0010 IMP Lab Sample ID: 140-16316-3

1,2&3 CONDENSATE

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorooctanesulfonic acid (PFOS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorooctanesulfonamide (FOSA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluoropentanesulfonic acid (PFPeS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Perfluorononanesulfonic acid (PFNS)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
4:2 FTS `	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
6:2 FTS	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
8:2 FTS	ND		50.0	49.0	ng/Sample		08/14/19 06:50	08/21/19 19:18	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	92		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C4 PFBA	94		25 - 150				08/14/19 06:50	08/23/19 11:53	1
13C5 PFPeA	95		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C2 PFHxA	99		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C4 PFHpA	109		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C4 PFOA	107		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C5 PFNA	101		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C2 PFDA	98		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C2 PFUnA	86		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C2 PFDoA	84		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C2 PFTeDA	79		25 - 150				08/14/19 06:50	08/21/19 19:18	100
1802 PFHxS	90		25 - 150				08/14/19 06:50	08/21/19 19:18	100
13C4 PFOS	91		25 - 150				08/14/19 06:50	08/21/19 19:18	100
d3-NMeFOSAA	96		25 - 150				08/14/19 06:50	08/21/19 19:18	100
d5-NEtFOSAA	83		25 - 150				08/14/19 06:50	08/21/19 19:18	100
M2-4:2 FTS	106		25 - 150				08/14/19 06:50	08/21/19 19:18	100
M2-6:2 FTS	116		25 - 150				08/14/19 06:50	08/21/19 19:18	100
M2-8:2 FTS	107		25 - 150				08/14/19 06:50	08/21/19 19:18	100
Method: 8321A - HFPO-DA Analyte	Posult	Qualifier	RL	MDI	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	174	Quanner	3.00		ug/Sample		08/14/19 05:53	08/19/19 11:20	10
				0.133	ug/Oarripie				
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

 Surrogate
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Factoria

 13C3 HFPO-DA
 101 D
 50 - 200
 08/14/19 05:53
 08/19/19 11:20
 10

Client Sample ID: Q-1733 BLDG J-26 OUTLET R1 M0010

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Method: 537 (modified) - Fluo	rinated Alkyl Substance	S					
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND —	2.50	2.45 ng/Sample		08/15/19 12:35	09/06/19 15:17	5

Lab Sample ID: 140-16316-4

Client: Chemours Company FC, LLC The

Job ID: 140-16316-1 Project/Site: Building J-26 Outlet - M0010

#### Client Sample ID: Q-1733 BLDG J-26 OUTLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Perfluorobutanoic acid (PFBA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorohexanoic acid (PFHxA)	27.3	B *	2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluoroheptanoic acid (PFHpA)	30.9	<b>B</b> *	2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	:
Perfluorooctanoic acid (PFOA)	12.1	IB*	2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorononanoic acid (PFNA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorodecanoic acid (PFDA)	6.70	В	2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluoroundecanoic acid (PFUnA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorododecanoic acid (PFDoA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorotridecanoic acid (PFTriA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	;
Perfluorotetradecanoic acid (PFTeA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorobutanesulfonic acid (PFBS)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorohexanesulfonic acid (PFHxS)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	,
Perfluorodecanesulfonic acid (PFDS)	ND		2.50		ng/Sample		08/15/19 12:35	09/06/19 15:17	:
Perfluorooctanesulfonic acid (PFOS)	ND		2.50		ng/Sample			09/06/19 15:17	:
Perfluorooctanesulfonamide (FOSA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluoropentanesulfonic acid (PFPeS)	ND		2.50		ng/Sample		08/15/19 12:35	09/06/19 15:17	
Perfluorononanesulfonic acid (PFNS)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		2.50		ng/Sample			09/06/19 15:17	,
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	;
4:2 FTS	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	:
6:2 FTS	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	
3:2 FTS	ND		2.50	2.45	ng/Sample		08/15/19 12:35	09/06/19 15:17	:
sotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	89	-	25 - 150				08/15/19 12:35	09/06/19 15:17	
13C5 PFPeA	106		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C2 PFHxA	104		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C4 PFHpA	118		25 - 150				08/15/19 12:35	09/06/19 15:17	,
13C4 PFOA	99		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C5 PFNA	120		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C2 PFDA	110		25 - 150				08/15/19 12:35	09/06/19 15:17	,
13C2 PFUnA	117		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C2 PFDoA	115		25 - 150				08/15/19 12:35	09/06/19 15:17	
13C2 PFTeDA	100		25 - 150				08/15/19 12:35	09/06/19 15:17	
1802 PFHxS	106		25 - 150				08/15/19 12:35	09/06/19 15:17	
3C4 PFOS	100		25 - 150				08/15/19 12:35	09/06/19 15:17	
13-NMeFOSAA	108		25 - 150				08/15/19 12:35	09/06/19 15:17	
15-NEtFOSAA	115		25 - 150				08/15/19 12:35	09/06/19 15:17	
M2-4:2 FTS	113		25 - 150				08/15/19 12:35	09/06/19 15:17	
M2-6:2 FTS	117		25 - 150					09/06/19 15:17	,
M2-8:2 FTS	106		25 - 150					09/06/19 15:17	

Analyzed

09/26/2019

Prepared

Lab Sample ID: 140-16316-4

RL

5.00

MDL Unit

4.90 ng/Sample

Result Qualifier

1140 B\*

Client: Chemours Company FC, LLC The Job ID: 140-16316-1

Project/Site: Building J-26 Outlet - M0010

Client Sample ID: Q-1733 BLDG J-26 OUTLET R1 M0010 Lab Sample ID: 140-16316-4

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 08/08/19 00:00 Matrix: Air

Date Received: 08/13/19 07:30 Sample Container: Air Train

Isotope Dilution 13C4 PFBA	%Recovery	Qualifier	25 - 150				<b>Prepared</b> 08/15/19 12:35	Analyzed 09/06/19 15:01	Dil Fac
_ Method: 8321A - PFOA	A and PFOS								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3.63		0.200	0.0400	ug/Sample		08/15/19 12:35	08/22/19 08:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HEPO-DA	47	X	50 - 200				08/15/19 12:35	08/22/19 08:56	

#### **Default Detection Limits**

Client: Chemours Company FC, LLC The
Project/Site: Building J-26 Outlet - M0010

Job ID: 140-16316-1

#### Method: 537 (modified) - Fluorinated Alkyl Substances

**Prep: None** 

Analyte	RL	MDL	Units	
4:2 FTS	0.500	0.490	ng/Sample	
6:2 FTS	0.500	0.490	ng/Sample	
8:2 FTS	0.500	0.490	ng/Sample	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample	
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample	
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample	
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample	
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample	
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample	
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample	
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample	
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample	
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample	
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample	
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample	
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample	
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample	
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample	
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample	
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample	
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample	

Method: 8321A - HFPO-DA

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00250	0.00128	ug/Sample

#### Method: 8321A - PFOA and PFOS

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.0250	0.00270	ug/Sample
HFPO-DA	0.100	0.0200	ug/Sample

# APPENDIX C SAMPLE CALCULATIONS

# SAMPLE CALCULATIONS FOR HFPO DIMER ACID (METHOD 0010)

Client: Chemours
Test Number: Run 1

Test Location: Carbon Drum Outlet

Plant: Chambers Works
Test Date: 08/08/19
Test Period: 0928-1328

#### 1. HFPO Dimer Acid concentration, lbs/dscf.

Conc1 = 
$$W \times 2.2046 \times 10^{-9}$$

Vm(std)

386.3 x 2.2046 x 10-9

Conc1 = 6.38E-09

Where:

W = Weight of HFPO Dimer Acid collected in sample in ug.

Conc1 = HFPO Dimer Acid concentration, lbs/dscf.

 $2.2046 \times 10^{-9}$  = Conversion factor from ug to lbs.

#### 2. HFPO Dimer Acid concentration, ug/dscm.

Conc2 =  $W / (Vm(std) \times 0.02832)$ 

 $Conc2 = 386.3 / (133.421 \times 0.02832)$ 

Conc2 = 102.2

Where:

Conc2 = HFPO Dimer Acid concentration, ug/dscm.

0.02832 = Conversion factor from cubic feet to cubic meters.

#### 3. HFPO Dimer Acid mass emission rate, lbs/hr.

 $MR1_{(Outlet)}$  = Conc1 x Qs(std) x 60 min/hr

 $MR1_{(Outlet)} = 6.38E-09 \times 17 \times 60$ 

 $MR1_{(Outlet)} = 6.38E-06$ 

Where:

MR1<sub>(Outlet)</sub> = HFPO Dimer Acid mass emission rate, lbs/hr.

#### 4. HFPO Dimer Acid mass emission rate, g/sec.

 $MR2_{(Outlet)} = MR1_{(Outlet)} \times 453.59 / 3600$ 

 $MR2_{(Outlet)} = 6.38E-06 \times 453.59 / 3600$ 

 $MR2_{(Outlet)} = 8.04E-07$ 

Where:

MR2<sub>(Outlet)</sub> = HFPO Dimer Acid mass emission rate, g/sec.

453.59 = Conversion factor from pounds to grams.

3600 = Conversion factor from hours to seconds.

#### 5. HFPO Dimer Acid Removal Efficiency, %

 $RE = MR1_{(Inlet)} - MR1_{(Outlet)}$ 

 $MR1_{(Inlet)}$ 

RE = (7.44E-03) - (6.38E-06)

7.44E-03

RE = 99.9

Where:

RE = Carbon Drum Removal Efficiency.

MR1<sub>(Inlet)</sub> = Carbon Drum Inlet HFPO Dimer Acid mass rate, lbs/hr.

 $MR1_{(Outlet)} = Carbon Drum Outlet HFPO Dimer Acid mass rate, lbs/hr.$ 

# APPENDIX D EQUIPMENT CALIBRATION RECORDS

#### INTERFERENCE CHECK

Date: 12/4/14-12/5/14 Analyzer Type: Servomex - O2 Model No: 1440 Serial No: 01420L/898 Calibration Span: 21.09 %
Pollutant: 21.09% O2 - CC418692

	ANALYZEF		
INTERFERENT GAS	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	% OF CALIBRATION SPAN <sup>(a)</sup>
CO <sub>2</sub> (30.17% CC199689) 0.00		0.09	0.4
NO (445 ppm CC346681)	0.10	0.02	0.5
NO <sub>2</sub> (23.78 ppm CC500749)	NA	NA	NA
N <sub>2</sub> O (90.4 ppm CC352661)	0.00	0.05	0.2
CO (461.5 ppm XC006064B)	0.00	0.02	0.0
SO <sub>2</sub> (451.2 ppm CC409079)	0.00	0.05	0.2
CH <sub>4</sub> (453.1 ppm SG901795)	NA	NA	NA
H <sub>2</sub> (552 ppm ALM048043)	0.10	0.09	0.5
HCl (45.1 ppm CC17830)	0.00	0.03	0.1
NH <sub>3</sub> (9.69 ppm CC58181)	0.00	0.09	0.4
	2.4		
	METHOD SPECIFICATION		< 2.5%

<sup>(</sup>a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

#### INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - CO2
Model No: 1440
Serial No: 01415L/711
Calibration Span: 16.65%
Pollutant: 16.65% CO2 - CC418692

	ANALYZEF		
INTERFERENT GAS	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	% OF CALIBRATION SPAN <sup>(a)</sup>
CO <sub>2</sub> (30.17% CC199689) NA		NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.1
NO <sub>2</sub> (23.78 ppm CC500749)	0.00	0.10	0.6
N <sub>2</sub> O (90.4 ppm CC352661)	0.00	0.01	0.0
CO (461.5 ppm XC006064B)	0.00	0.01	0.0
SO <sub>2</sub> (451.2 ppm CC409079)	0.00	0.01	0.0
CH <sub>4</sub> (453.1 ppm SG901795)	0.00	0.03	0.2
H <sub>2</sub> (552 ppm ALM048043)	0.00	0.04	0.2
HCl (45.1 ppm CC17830)	0.10	0.04	0.6
NH <sub>3</sub> (9.69 ppm CC58181)	0.00	0.02	0.1
	1.9		
	METHOD SPECIFICATION		< 2.5%

<sup>(</sup>a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker



#### **CERTIFICATE OF ANALYSIS**

#### **Grade of Product: EPA Protocol**

Part Number: E03NI79E15A00E4 Reference Number: 82-401288926-1

Cylinder Number: CC18055 Cylinder Volume: 150.5 CF Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG

PGVP Number: B52018 Valve Outlet: 590

Gas Code: CO2,O2,BALN Certification Date: Sep 04, 2018

Expiration Date: Sep 04, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

	ANALYTICAL RESULTS									
Compon	ent	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates				
CARBON	DIOXIDE	9.000 %	8.864 %	G1	+/- 0.7% NIST Traceable	09/04/2018				
OXYGEN		12.00 %	12.00 %	G1	+/- 0.4% NIST Traceable	09/04/2018				
NITROGE	N	Balance			-					
			CALIBRATION	N STANDARDS	6					
Type	Lot ID	Cylinder No	Concentration		Uncertainty	Expiration Date				
NTRM	13060629	CC413730	13.359 % CARBON [	DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019				
Instrumo	ent/Make/Mod	lol	ANALYTICAL Analytical Princi	-	Last Multipoint Calib	ration				
				pie	·	Tation				
	\$ 510-CO2-19G		NDIR		Aug 09, 2018					
Horiba MP	PA 510-O2-7TW	MJ041	Paramagnetic		Aug 09. 2018					

**Triad Data Available Upon Request** 





#### **CERTIFICATE OF ANALYSIS**

#### **Grade of Product: EPA Protocol**

Part Number: E03NI62E15A0224 Reference Number: 82-124503752-1

Cylinder Number: CC18531 Cylinder Volume: 157.2 CF Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG

PGVP Number: B52015 Valve Outlet: 590

Gas Code: CO2,O2,BALN Certification Date: Jul 22, 2015

Expiration Date: Jul 22, 2023

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS							
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates		
CARBON DIOXIDE	17.00 %	16.75 %	G1	+/- 0.7% NIST Traceable	07/22/2015		
OXYGEN	21.00 %	21.19 %	G1	+/- 0.5% NIST Traceable	07/22/2015		
NITROGEN	Balance			-			

	CALIBRATION STANDARDS							
Type	Lot ID	Cylinder No	Concentration	Uncertainty	<b>Expiration Date</b>			
NTRM	13060739	CC414621	16.939 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 08, 2019			
NTRM	09061440	CC282668	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019			

ANALYTICAL EQUIPMENT

Instrument/Make/Model Analytical Principle Last Multipoint Calibration

**Triad Data Available Upon Request** 



#### Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

Calibrator MDW Meter Box Number 30 Ambient Temp 72
Thermocouple Simulator
Date 21-Feb-19 Wet Test Meter Number P-2952 Temp Reference Source (Accuracy +/- 1°F)

Dry Gas Meter Number 17485131

Setting	Gas	Volume		Tempe	ratures			Baro Press, in Hg ( Pb)	29.87
Orifice Manometer	Wet Test Meter	Dry gas Meter	Wet Test Meter		Dry Gas Meter			Calibration	Results
in H₂0 (∆H)	ft <sup>3</sup> (Vw)	ft <sup>3</sup> (Vd)	°F (Tw)	Outlet, °F (Td <sub>o</sub> )	Inlet, °F (Td <sub>i</sub> )	Average, °F (Td)	Time, min (O)	Y	ΔН
0.5	5.0	905.750 910.724 4.974	70.0	70.00 70.00 70.00	70.00 70.00 70.00	68.0	12.8	1.0002	1.8501
1.0	5.0	911.701 916.685 4.984	70.0	71.00 71.00 71.00	71.00 71.00 71.00	70.0	9.0	1.0007	1.8224
1.5	10.0	917.680 927.695 10.015	70.0	72.00 74.00 73.00	72.00 74.00 73.00	72.5	15.0	0.9995	1.8894
2.0	10.0	928.690 938.780 10.090	70.0	74.00 75.00 74.50	74.00 75.00 74.50	74.5	13.0	0.9946	1.8851
3.0	10.0	939.800 949.930 10.130	70.0	76.00 77.00 76.50	76.00 77.00 76.50	76.0	10.7	0.9910	1.9103
							Average	0.9972	1.8715

Vw - Gas Volume passing through the wet test meter

Vd - Gas Volume passing through the dry gas meter

Tw - Temp of gas in the wet test meter

Tdi - Temp of the inlet gas of the dry gas meter

Tdo - Temp of the outlet gas of the dry gas meter

Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run

Pb - Barometric Pressure

ΔH - Pressure differential across

orifice

Y - Ratio of accuracy of wet test

meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6}\right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)}\right] * \left[\frac{(tw + 460) * O}{Vw}\right]^{2}$$

Reference Temperature Select Temperature		Temperature F	Reading from Ir	ndividual Thern	nocouple Input	1	Average Temperature	Temp Difference <sup>2</sup> (%)
O°C ●°F			Channe	l Number			Reading	
O °C ● °F	1	2	3	4	5	6		
32	32	32	32	32	32		32.0	0.0%
212	212	213	213	212	212		212.4	-0.1%
932	932	933	933	932	932		932.4	0.0%
1832	1832	1832	1832	1832	1832		1832.0	0.0%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

Temp Diff = 
$$\frac{\left( \text{Reference Temp(°F)} + 460 \right) - \left( \text{Test Temp(°F)} + 460 \right)}{\text{Reference Temp(°F)} + 460}$$

#### **Y Factor Calibration Check Calculation**

#### MODIFIED METHOD 0010 TEST TRAIN

#### **CARBON DRUM INLET**

#### METER BOX NO. 30

08/08/19

	Run 1
MWd = Dry molecular weight source gas, lb/lb-mole.	
0.32 = Molecular weight of oxygen, divided by 100.	
0.44 = Molecular weight of carbon dioxide, divided by 100.	
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO <sub>2</sub> = Percent carbon dioxide by volume, dry basis.	0.0
$\% O_2$ = Percent oxygen by volume, dry basis.	0.0

$$MWd = (\ 0.32\ ^{*}O_{2}\ ) + (\ 0.44\ ^{*}CO_{2}\ ) + (\ 0.28\ ^{*}\ (\ 100\ \text{-}\ (\ CO_{2}\ + O_{2}\ )))$$

$$MWd = (0.32 * 0) + (0.44 * 0) + (0.28 * (100 - (0 + 0)))$$

$$MWd = (0.00) + (0.00) + (28.00)$$

 $\mathbf{MWd} = 28.00$ 

Tma = Source Temperature, absolute(°R)	
Tm = Average dry gas meter temperature, deg F.	94.8

$$Tma = Ts + 460$$

$$Tma = 94.79 + 460$$

Tma = 554.79

Ps = Absolute meter pressure, inches Hg.	
13.60 = Specific gravity of mercury.	
delta H = Avg pressure drop across the orifice meter during sampling, in H2O	1.00
Pb = Barometric Pressure, in Hg.	29.79

$$Pm = Pb + (delta H / 13.6)$$

$$Pm = 29.79 + (1/13.6)$$

Pm = 29.86

Yqa = dry gas meter calibration check value, dimensionless.	
0.03 = (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.	
29.00 = dry molecular weight of air, lb/lb-mole.	
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	136.362
Y = Dry gas meter calibration factor (based on full calibration)	0.9972
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H2O.	1.8715
avg SQRT Delta $H = Avg$ SQRT press. drop across the orifice meter during sampling , in. $H_2O$	1.0000
O = Total sampling time, minutes.	240

$$Yqa = (O \, / \, Vm \,) * SQRT \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \quad * avg \; SQRT \; Delta \, H$$

$$Yqa = (240.00 / 136.36) * SQRT (0.0319 * 554.79 * 29) / (1.87 * 29.86 * 28.00) * 1.00$$

$$Yqa = 1.760 * SQRT 513.238 / 1,564.724 * 1.00$$

 $\mathbf{Yqa} = 1.008$ 

Diff = Absolute difference between Yqa and Y	1.08

Average Diff = 1.08

Allowable = 5.0

#### Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

Calibrator MDW Meter Box Number 22 Ambient Temp 72

Thermocouple Simulator

Date 29-Jul-19 Wet Test Meter Number P-2952 Temp Reference Source (Accuracy +/- 1°F)

Dry Gas Meter Number 15550528

Setting	Gas	Volume		Tempe	ratures	-		Baro Press, in Hg ( Pb)	29.88
Orifice Manometer	Wet Test Meter	Dry gas Meter	Wet Test Meter		Dry Gas Meter			Calibration	Results
in H₂0 (ΔH)	ft <sup>3</sup> (Vw)	ft <sup>3</sup> (Vd)	°F (Tw)	Outlet, °F (Td <sub>o</sub> )	Inlet, °F (Td <sub>i</sub> )	Average, °F (Td)	Time, min (O)	Y	ΔН
0.5	5.0	836.525 841.510 4.985	72.0	72.00 74.00 73.00	72.00 74.00 73.00	73.0	12.5	1.0037	1.7605
1.0	5.0	842.500 847.495 4.995	72.0	74.00 74.00 74.00	74.00 74.00 74.00	74.0	9.0	1.0023	1.8218
1.5	10.0	848.472 858.501 10.029	72.0	75.00 76.00 75.50	75.00 76.00 75.50	75.5	14.8	1.0000	1.8423
2.0	10.0	859.524 869.600 10.076	72.0	75.00 76.00 75.50	75.00 76.00 75.50	75.5	13.0	0.9941	1.8952
3.0	10.0	870.662 880.800 10.138	72.0	77.00 78.00 77.50	77.00 78.00 77.50	77.5	10.70	0.9893	1.9187
							Average	0.9979	1.8477

Vw - Gas Volume passing through the wet test meter

Vd - Gas Volume passing through the dry gas meter

Tw - Temp of gas in the wet test meter

Tdi - Temp of the inlet gas of the dry gas meter

Tdo - Temp of the outlet gas of the dry gas meter

Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run

Pb - Barometric Pressure

ΔH - Pressure differential across

orifice

Y - Ratio of accuracy of wet test

meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6}\right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)}\right] * \left[\frac{(tw + 460) * O}{Vw}\right]^{2}$$

Reference Temperature Select Temperature		Temperature F	Reading from Ir	ndividual Thern	nocouple Input	1	Average Temperature	Temp Difference <sup>2</sup>
O°C ●°F			Channe	l Number			Reading	(%)
O °C ● °F	1	2	3	4	5	6		. ,
32	33	33	32	33	33		32.8	-0.2%
212	212	213	211	211	211		211.6	0.1%
932	933	933	933	933	932		932.8	-0.1%
1832	1833	1833	1833	1832	1832		1832.6	0.0%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

Temp Diff = 
$$\frac{\left[ \frac{\left( \text{Reference Temp}(^{\circ}\text{F}) + 460 \right) - \left( \text{Test Temp}(^{\circ}\text{F}) + 460 \right)}{\text{Reference Temp}(^{\circ}\text{F}) + 460} \right] }{\text{Reference Temp}(^{\circ}\text{F}) + 460}$$

#### **Y Factor Calibration Check Calculation**

## MODIFIED METHOD 0010 TEST TRAIN

#### CARBON DRUM OUTLET

METER BOX NO. 22 08/08/19

	Run 1
MWd = Dry molecular weight source gas, lb/lb-mole.	
0.32 = Molecular weight of oxygen, divided by 100.	
0.44 = Molecular weight of carbon dioxide, divided by 100.	
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO <sub>2</sub> = Percent carbon dioxide by volume, dry basis.	0.0
$\% O_2$ = Percent oxygen by volume, dry basis.	3.2

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWd = (\ 0.32\ ^*\ 0\ ) + (\ 0.44\ ^*\ 0\ ) + (\ 0.28\ ^*\ (\ 100\ \text{--}\ (\ 0+0\ )))$$

$$MWd = (\ 0.00\ ) + (\ 0.00\ ) + (\ 28.00\ )$$

MWd =

Tma = Source Temperature, absolute(°R)	
Tm = Average dry gas meter temperature, deg F.	95.6

$$Tma = Ts \ + 460$$

$$Tma = 94.79 + 460$$

Tma =

555.63

28.13

Ps = Absolute meter pressure, inches Hg.	
13.60 = Specific gravity of mercury.	
delta H = Avg pressure drop across the orifice meter during sampling, in H2O	1.00
Pb = Barometric Pressure, in Hg.	29.79

$$Pm = Pb + (delta H / 13.6)$$

$$Pm = 29.79 + (1/13.6)$$

Pm =

29.86

Yqa = dry gas meter calibration check value, dimensionless.			
0.03 = (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.			
29.00 = dry molecular weight of air, lb/lb-mole.			
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	141.020		
Y = Dry gas meter calibration factor (based on full calibration)	0.9979		
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H2O.	1.8715		
avg SQRT Delta $H = Avg$ SQRT press. drop across the orifice meter during sampling , in. $H_2O$	1.0000		
O = Total sampling time, minutes.	240		

$$Yqa = (O \ / \ Vm \ ) * SQRT \ ( \ 0.0319 * Tma * 29 \ ) \ / \ ( \ Delta \ H@ * Pm * MWd \ ) \\ \hspace*{0.2cm} * avg \ SQRT \ Delta \ H \ ( \ Delta \ H@ * Pm * MWd \ ) \\ \hspace*{0.2cm} * avg \ SQRT \ Delta \ H \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ ) \ ( \ ) \ ( \ Delta \ H \ ( \ ) \ ( \ \ )$$

$$Yqa = (240.00 / 136.36) * SQRT (0.0319 * 554.79 * 29) / (1.87 * 29.86 * 28.00) * 1.00$$

Yqa = 0.973

Diff = Absolute difference between Yqa and Y	2.50

Diff = (( Y - Yqa ) / Y ) \* 100

Diff = (( 0.9972 - 1.008 ) / 0.9972 ) \* 100

Average Diff = 2.5

Allowable = 5.0

# APPENDIX E LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

Paul Meeter	Senior Project Manager
Jeff O'Neill	Senior Project Manager
Steve Rathfon	Senior Technician

# BLDG. J-26, CARBON DRUM INLET/OUTLET FLUOROMONOMERS MANUFACTURING PROCESS EMISSIONS TEST REPORT TEST DATE: 6 SEPTEMBER 2019

# THE CHEMOURS COMPANY DEEPWATER, NEW JERSEY

#### Prepared for:



#### THE CHEMOURS COMPANY

67 Canal Road Deepwater, NJ 08023

Prepared by:



#### WESTON SOLUTIONS, INC.

1400 Weston Way P.O. Box 2653 West Chester, Pennsylvania 19380

November 2019

W.O. No. 15418.001.005

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#### 1. INTRODUCTION

#### 1.1 FACILITY AND BACKGROUND INFORMATION

The Chemours Company Chambers Works (Chemours) facility is located in Deepwater, New Jersey.

Chemours contracted Weston Solutions, Inc. (WESTON) to perform target per- and polyfluoroalkyl substance (PFAS) and HFPO Dimer Acid emission testing on the Bldg. J-26 Carbon Drum Inlet and Carbon Drum Outlet. Testing was performed on 6 September 2019 and generally followed the "Emissions Test Protocol" utilized at other Chemours facilities. This report provides the results from the emission test program.

#### 1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the emissions concentrations of PFAS and HFPO Dimer Acid from the Bldg.
   J-26 Carbon Drum Inlet and Carbon Drum Outlet.
- Provide representative emissions data and drum removal efficiency.

#### 1.3 TEST PROGRAM OVERVIEW

Table 1-1 provides a summary of the test locations and the parameters that were measured along with the sampling/analytical procedures that were followed.

Section 2 provides a summary of test results. Section 3 provides a description of the test locations. The sampling and analytical procedures are provided in Section 4. Detailed test results and discussion are provided in Section 5.

Appendix B includes the summary reports for the laboratory analytical results. The full laboratory data packages are provided in electronic format.

Table 1-1
Sampling Plan for Carbon Drum

Sampling Point & Location	Building J-26 Carbon Drum					
Number of Tests:	2 (1 Carbon Drum Inlet, 1 Carbon Drum Outlet)					
Parameters To Be Tested:	PFAS and HFPO Dimer Acid	Carbon Dioxide	- 11.7 8 - 11.			
Sampling or Monitoring Method	EPA M-0010	EPA M3/3A		EPA M4 in conjunction with M-0010 tests		
Sample Extraction/ Analysis Method(s):	LC/MS/MS	NA		NA		
Sample Size	> 3m <sup>3</sup>	NA	NA	NA		
Total Number of Samples Collected <sup>1</sup>	2	1	1	2		
Reagent Blanks (Solvents, Resins) <sup>1</sup>	1 set	0	0	0		
Field Blank Trains <sup>1</sup>	1 set	0	0	0		
Proof Blanks <sup>1</sup>	1 set	0	0	0		
Trip Blanks <sup>1,2</sup>	1 set	0	0			
Lab Blanks	1 per fraction <sup>3</sup>	0	0	0		
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction <sup>3</sup>	0	0	0		
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction <sup>3</sup>	0	0	0		
Media Blanks	1 set <sup>4</sup>	0	0	0		
Isotope Dilution Internal Standard Spikes	Each sample	0	0	0		
Total No. of Samples	65	1	1	2		

#### Key:

NA = Not applicable.

<sup>&</sup>lt;sup>1</sup> Sample collected in field.

<sup>&</sup>lt;sup>2</sup> Trip blanks include one XAD-2 resin module and one methanol sample per sample shipment.

<sup>&</sup>lt;sup>3</sup> Lab blank and LCS/LCSD includes one set per analytical fraction (front half, back half and condensate).

<sup>&</sup>lt;sup>4</sup> One set of media blank archived at laboratory at media preparation.

<sup>&</sup>lt;sup>5</sup> Actual number of samples collected in field.

#### 2. SUMMARY OF TEST RESULTS

One test run was performed simultaneously on the Carbon Drum Inlet and Carbon Drum Outlet. Table 2-1 provides a summary of the PFAS and HFPO Dimer Acid emission test results. Detailed test results summaries are provided in Section 5.

It is important to note that emphasis is being placed on the characterization of the emissions based on the stack test results. Research conducted in developing the protocol for stack testing HFPO Dimer Acid Fluoride (CAS No. 2062-98-8), HFPO Dimer Acid Ammonium Salt and HFPO Dimer Acid (CAS No. 13252-13-6) realized that the resulting testing, including collection of the air samples and extraction of the various fraction of the sampling train, would result in all three compounds being expressed as simply the HFPO Dimer Acid. However, it should be understood that the total HFPO Dimer Acid results provided on Table 2-1 and in this report may include a percentage of each of the three compounds.

Table 2-1 Summary of Test Results

Target Compound	Inlet		Outlet		Removal Efficiency
	g/sec	lb/hr	g/sec	lb/hr	%
Perfluorobutanoic acid (PFBA)	1.345E-04	1.068E-03	8.72E-06	6.926E-05	93.52
Perfluoropentanoic acid (PFPeA)	3.975E-06	3.157E-05	8.65E-12	6.871E-11	>99.99
Perfluorohexanoic acid (PFHxA)	4.99E-09	3.966E-08	2.49E-12	1.978E-11	99.95
Perfluoroheptanoic acid (PFHpA)	2.486E-10	1.975E-09	<1.180E-9	<9.372E-09	NA**
Perfluorooctanoic acid (PFOA)	<4.307E-09	<3.421E-08	1.317E-12	1.046E-11	99.97*
Perfluorononanoic acid (PFNA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorodecanoic acid (PFDA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoroundecanoic acid (PFUnA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorododecanoic acid (PFDoA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorotridecanoic acid (PFTriA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorotetradecanoic acid (PFTeA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorobutanesulfonic acid (PFBS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoropentanesculfonic acid (PFPeS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorohexanesulfonic acid (PFHxS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluoroheptanesulfonic acid (PFHpS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorooctanesulfonic acid (PFOS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorononanesulfonic acid (PFNS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorodecanesulfonic acid (PFDS)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
Perfluorooctanesulfonamide (FOSA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
N- methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
4:2 FTS	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
6:2 FTS	1.625E-08	1.290E-08	3.205E-09	2.546E-08	80.27
8:2 FTS	<4.307E-09	<3.421E-08	<1.180E-9	<9.372E-09	NA
HFPO Dimer Acid	5.358E-04	4.256E-03	1.319E-7	1.048E-06	99.98

<sup>\*</sup>Removal efficiency calculated using method detection limit values for carbon drum inlet emission concentration rates.

NA Removal efficiency was not calculated because the carbon drum inlet and carbon drum outlet concentrations were all non-detects.

<sup>\*\*</sup>Removal efficiency was not calculated because the carbon drum outlet detection limit was higher than the detected value at the carbon drum inlet.

#### 3. DESCRIPTION OF TEST LOCATIONS

#### 3.1 CARBON DRUM INLET AND OUTLET

The inlet and outlet of the 55 gallon carbon drum are connected to the process streams by an SS braided flexible line. The sample locations are at the T-connections where the flexible line and the process stream inlet and outlet pipes join. Each T-connection for sampling was made with a leak-tight fitting on the end of the tubing used as a sample probe for the sample train. See Figure 3-1 for Carbon Drum Inlet and Carbon Drum Outlet sample locations.

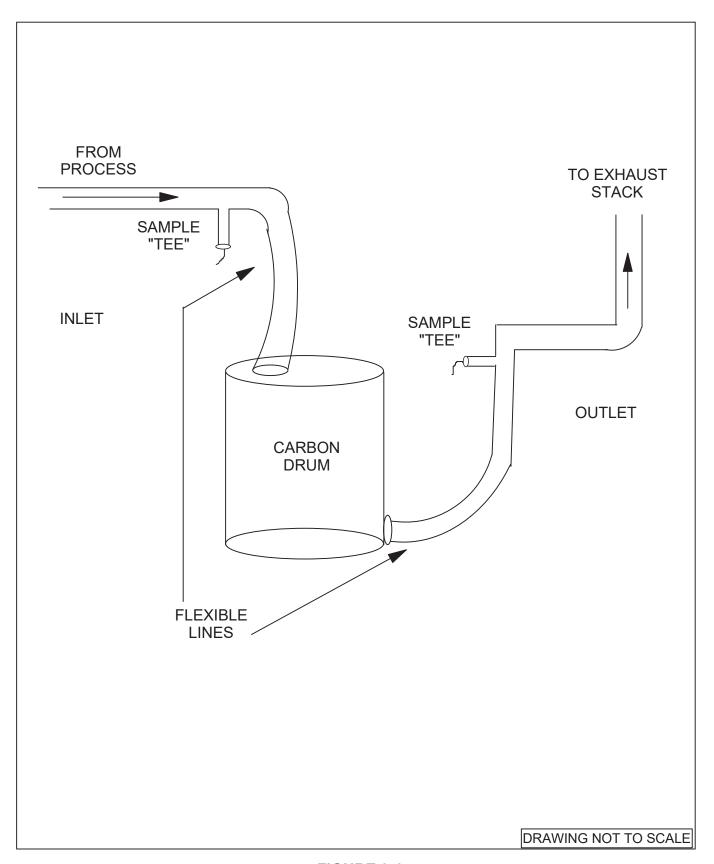


FIGURE 3-1
BUILDING J26
CARBON DRUM INLET AND OUTLET SAMPLE LOCATION

#### 4. SAMPLING AND ANALYTICAL METHODS

#### 4.1 STACK GAS SAMPLING PROCEDURES

The purpose of this section is to describe the stack gas emissions sampling train and to provide details of the stack sampling and analytical procedures utilized during the emissions test program.

#### 4.2 STACK PARAMETERS

#### 4.2.1 EPA Method 0010

The sampling train utilized to perform the HFPO Dimer Acid and PFAS sampling was an EPA Method 0010 train (see Figure 4-1). The Method 0010 probe consisted of a flexible length of poly tubing. The tubing was connected directly to a heated borosilicate filter holder containing a solvent extracted glass fiber filter.

A section of borosilicate glass connected the filter holder exit to a spiral type ice water-cooled condenser and an ice water-jacketed sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 resin tube was equipped with an inlet temperature sensor. The XAD-2 resin trap was followed by a condensate knockout impinger and a series of two impingers that contained 100 mL of high purity distilled water. The train also included a second XAD-2 resin trap behind the impinger section to evaluate possible sampling train breakthrough. Each XAD-2 resin trap was connected to a 1-L condensate knockout trap. The final impinger contained 300 grams of dry pre-weighed silica gel. All impingers and the condensate traps were maintained in an ice bath. Ice water was continuously circulated in the condenser and the XAD-2 module to maintain method required temperature. A control console with a leakless vacuum pump, a calibrated orifice, and dual inclined manometers was connected to the final impinger via an umbilical cord to complete the sample train.

Leak checks were performed on the sampling apparatus according to reference method instructions, prior to and following each run and component change (if required).

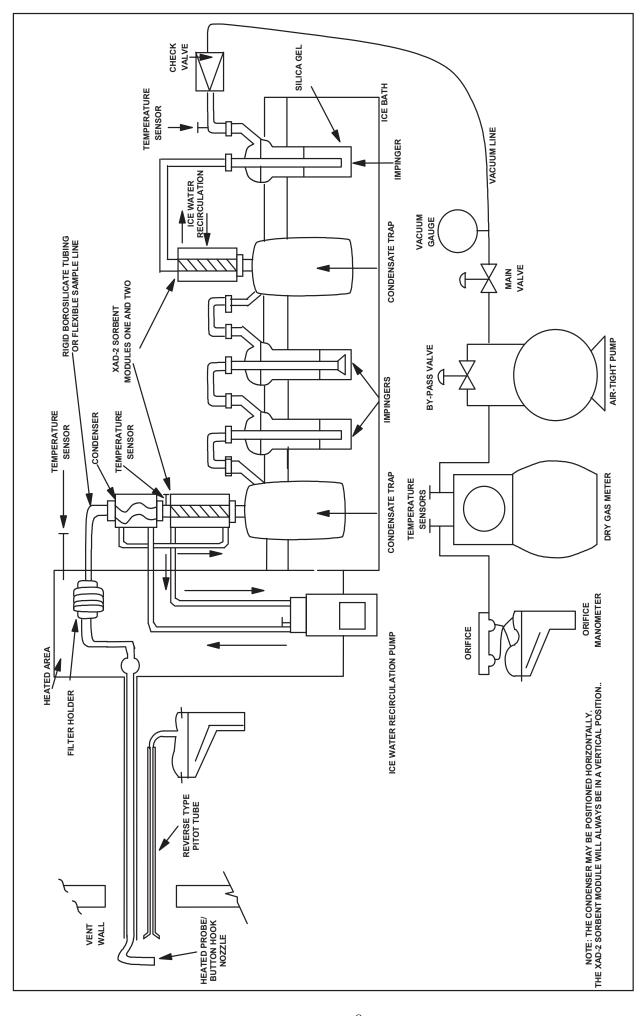


FIGURE 4-1 EPA METHOD 0010 SAMPLING TRAIN

#### 4.2.2 EPA Method 0010 Sample Recovery

At the conclusion of each test, the sampling train was dismantled, the openings sealed, and the components transported to the field laboratory trailer for recovery.

A consistent procedure was employed for sample recovery:

- 1. The two XAD-2 traps were covered (to minimize light degradation) and were sealed and labeled.
- 2. The glass fiber filter(s) were removed from the holder with tweezers and placed in a polyethylene container along with any loose particulate and filter fragments.
- 3. The particulate adhering to the internal surfaces of the flexible tubing and front half of the filter holder were rinsed with a solution of methanol and ammonium hydroxide into a polyethylene container while brushing a minimum of three times until no visible particulate remains. Particulate adhering to the brush was rinsed with methanol/ammonium hydroxide into the same container. The container was sealed.
- 4. The volume of liquid collected in the first condensate trap was measured, the value recorded, and the contents poured into a polyethylene container.
- 5. All train components between the filter exit and the first condensate trap were rinsed with methanol/ammonium hydroxide. The solvent rinse was placed in a separate polyethylene container and sealed.
- 6. The volume of liquid in impingers one and two, and the second condensate trap, were measured, the values recorded, and the sample was placed in the same container as Step 4 above and sealed.
- 7. The two impingers, condensate traps, and connectors were rinsed with methanol/ammonium hydroxide. The solvent sample was placed in a separate polyethylene container and sealed.
- 8. The silica gel in the final impinger was weighed and the weight gain value recorded.
- 9. Site (reagent) blank samples of the methanol/ammonium hydroxide, XAD resin, filter and distilled water were retained for analysis.

Each container was labeled to clearly identify its contents. The height of the fluid level was marked on the container of each liquid sample to provide a reference point for a leakage check during transport. All samples were maintained cool.

During the test campaign, an M-0010 blank train was setup near the test location, leak checked and recovered along with the respective sample train. Following sample recovery, all samples were transported to TestAmerica Laboratories, Inc. (TestAmerica) for sample extraction and analysis.

See Figure 4-2 for a schematic of the M-0010 sample recovery process.

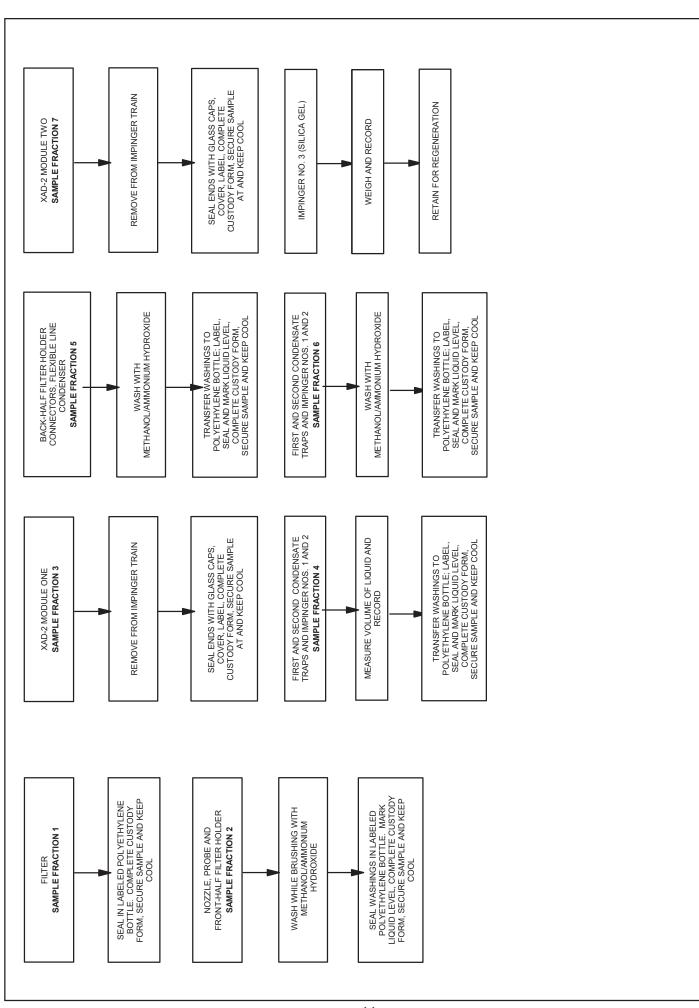
#### 4.2.3 EPA Method 0010 – Sample Analysis

Method 0010 sampling trains resulted in four separate analytical fractions for PFAS and HFPO Dimer Acid analysis according to SW-846 Method 3542:

- Front-Half Composite—comprised of the particulate filter, and the flexible tubing and front-half of the filter holder solvent rinses;
- Back-half Composite—comprised of the first XAD-2 resin material and the back-half of the filter holder with connecting glassware solvent rinses;
- Condensate Composite—comprised of the aqueous condensates and the contents of impingers one and two with solvent rinses;
- Breakthrough XAD-2 Resin Tube—comprised of the resin tube behind the series of impingers.

The second XAD-2 resin material was analyzed separately to evaluate any possible sampling train HFPO-DA breakthrough.

The front-half and back-half composites and the second XAD-2 resin material were placed in polypropylene wide-mouth bottles and tumbled with methanol containing 5% NH<sub>4</sub>OH for 18 hours. Portions of the extracts were processed analytically for the HFPO dimer acid by liquid



chromatography and duel mass spectroscopy (HPLC/MS/MS). The condensate composite was concentrated onto a solid phase extraction (SPE) cartridge followed by desorption from the cartridge using methanol. Portions of those extracts were also processed analytically by HPLC/MS/MS.

Samples were spiked with isotope dilution internal standards (IDA) at the commencement of their preparation to provide accurate assessments of the analytical recoveries. Final data was corrected for IDA standard recoveries.

#### 4.3 GAS COMPOSITION

The oxygen and carbon dioxide content of the stack gas was measured according to EPA Method 3/3A procedures which incorporate the latest updates of EPA Method 7E. A Servomex Model 1440 analyzer (or equivalent) was used to measure oxygen content. A Servomex Model 1440 analyzer (or equivalent) was used to measure carbon dioxide content of the stack gas. Both analyzers were calibrated with EPA Protocol gases prior to the start of the test program and performance was verified by calibration checks before each test run.

#### 4.4 VOLUMETRIC FLOW RATE

The volumetric flow rate was provided by Chemours and was assumed to be 1,000 scfh (16.67 scfm).

### 5. DETAILED TEST RESULTS AND DISCUSSION

The test was a minimum of 240 minutes in duration. A total of one test run on the inlet and outlet was performed simultaneously. Table 5-1 provides detailed test data and test results for the Carbon Drum Inlet and Carbon Drum Outlet.

TABLE 5-1
CHEMOURS - CHAMBERS WORKS
SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS
BUILDING J-26 CARBON DRUM INLET AND OUTLET

Test Data Run number Location Date Time period	1 Carbon Drum Inlet 09/06/19 0953-1353	2 Carbon Drum Outlet 09/06/19 0953-1353
1		
SAMPLING DATA:		
Sampling duration, min.	240.0	240.0
Barometric pressure, in. Hg	29.87	29.87
Avg. orifice press. diff., in H <sub>2</sub> O	1.00	1.00
Avg. dry gas meter temp., deg F	75.3	74.4
Avg. abs. dry gas meter temp., deg. R	535	534
Total liquid collected by train, ml	93.4	92.4
Std. vol. of H <sub>2</sub> O vapor coll., cu.ft.	4.40	4.35
Dry gas meter calibration factor	0.9972	1.0073
Sample vol. at meter cond., dcf	131.605	127.625
Sample vol. at std. cond., dscf <sup>(1)</sup>	129.509	127.057
GAS STREAM COMPOSITION DATA:		
CO <sub>2</sub> , % by volume, dry basis	0.2	0.2
O <sub>2</sub> , % by volume, dry basis	1.0	0.8
N <sub>2</sub> , % by volume, dry basis	98.8	99.0
Molecular wt. of dry gas, lb/lb mole	28.07	28.06
H <sub>2</sub> 0 vapor in gas stream, prop. by vol.	0.033	0.033
Mole fraction of dry gas	0.967	0.967
Molecular wt. of wet gas, lb/lb mole	27.74	27.73
GAS STREAM VELOCITY AND VOLUMETRIC FLOW D	ATA:	
Total number of traverse points	1	1
Avg. gas stream volumetric flow, dscf/min.	17	17

<sup>(1)</sup> Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

#### **CHEMOURS - CHAMBERS WORKS**

## SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

TEST D	)ATA
--------	------

IESI DATA				
Run number		1		2
		Carbon Drum		Carbon Drum
Location		Inlet		Outlet
Date		09/06/19		09/06/19
Time period		0953-1353		0953-1353
LABORATORY REPORT DATA, ug.				
Perfluorobutanoic acid (PFBA)		62760.0		3991.6
Perfluoropentanoic acid (PFPeA)		1854.710		0.004
Perfluorohexanoic acid (PFHxA)		2.330		0.001
Perfluoroheptanoic acid (PFHpA)		0.116	<	0.540
Perfluorooctanoic acid (PFOA)	<	2.010		0.001
Perfluorononanoic acid (PFNA)	<	2.010	<	0.540
Perfluorodecanoic acid (PFDA)	<	2.010	<	0.540
Perfluoroundecanoic acid (PFUnA)	<	2.010	<	0.540
Perfluorododecanoic acid (PFDoA)	<	2.010	<	0.540
Perfluorotridecanoic acid (PFTriA)	<	2.010	<	0.540
Perfluorotetradecanoic acid (PFTeA)	<	2.010	<	0.540
Perfluorobutanesulfonic acid (PFBS)	<	2.010	<	0.540
Perfluoropentanesculfonic acid (PFPeS)	<	2.010	<	0.540
Perfluorohexanesulfonic acid (PFHxS)	<	2.010	<	0.540
Perfluoroheptanesulfonic acid (PFHpS)	<	2.010	<	0.540
Perfluorooctanesulfonic acid (PFOS)	<	2.010	<	0.540
Perfluorononanesulfonic acid (PFNS)	<	2.010	<	0.540
Perfluorodecanesulfonic acid (PFDS)	<	2.010	<	0.540
Perfluorooctanesulfonamide (FOSA)	<	2.010	<	0.540
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	2.010	<	0.540
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	2.010	<	0.540
4:2 FTS	<	2.010	<	0.540
6:2 FTS		7.580		1.467
8:2 FTS	<	2.010	<	0.540
HFPO Dimer Acid		250004.0		60.39

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for the first three analytical fractions of the target compound in order to develop emission concentrations.

#### TABLE 5-1 (cont.) CHEMOURS - CHAMBERS WORKS

## SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

#### TEST DATA

	1		2
	Carbon Drum		Carbon Drum
	Inlet		Outlet
	09/06/19		09/06/19
	0953-1353		0953-1353
	17109.77		1109.20
	505.64		0.001
	0.635		0.000
	0.032	<	0.150
<	0.55		0.000
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
<	0.548	<	0.150
	2.066		0.408
<	0.548	<	0.150
	68156.64		16.780
	< < < < < < < < < < < < < < < < < < <	Carbon Drum Inlet 09/06/19 0953-1353  17109.77 505.64 0.635 0.032 < 0.555 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548	Carbon Drum Inlet 09/06/19 0953-1353  17109.77 505.64 0.635 0.032 < 0.55 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548 < 0.548

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for the first three analytical fractions of the target compound in order to develop emission concentrations.

# CHEMOURS - CHAMBERS WORKS SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

#### **TEST DATA**

IESI DATA				
Run number		1		2
		Carbon Drum		Carbon Drum
Location		Inlet		Outlet
Date		09/06/19		09/06/19
Time period		0953-1353		0953-1353
EMISSION RESULTS, lb/dscf.				
Perfluorobutanoic acid (PFBA)		1.068E-06		6.926E-08
Perfluoropentanoic acid (PFPeA)		3.157E-08		6.871E-14
Perfluorohexanoic acid (PFHxA)		3.966E-11		1.978E-14
Perfluoroheptanoic acid (PFHpA)		1.975E-12	<	9.372E-12
Perfluorooctanoic acid (PFOA)	<	3.421E-11		1.046E-14
Perfluorononanoic acid (PFNA)	<	3.421E-11	<	9.372E-12
Perfluorodecanoic acid (PFDA)	<	3.421E-11	<	9.372E-12
Perfluoroundecanoic acid (PFUnA)	<	3.421E-11	<	9.372E-12
Perfluorododecanoic acid (PFDoA)	<	3.421E-11	<	9.372E-12
Perfluorotridecanoic acid (PFTriA)	<	3.421E-11	<	9.372E-12
Perfluorotetradecanoic acid (PFTeA)	<	3.421E-11	<	9.372E-12
Perfluorobutanesulfonic acid (PFBS)	<	3.421E-11	<	9.372E-12
Perfluoropentanesculfonic acid (PFPeS)	<	3.421E-11	<	9.372E-12
Perfluorohexanesulfonic acid (PFHxS)	<	3.421E-11	<	9.372E-12
Perfluoroheptanesulfonic acid (PFHpS)	<	3.421E-11	<	9.372E-12
Perfluorooctanesulfonic acid (PFOS)	<	3.421E-11	<	9.372E-12
Perfluorononanesulfonic acid (PFNS)	<	3.421E-11	<	9.372E-12
Perfluorodecanesulfonic acid (PFDS)	<	3.421E-11	<	9.372E-12
Perfluorooctanesulfonamide (FOSA)	<	3.421E-11	<	9.372E-12
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	3.421E-11	<	9.372E-12
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	3.421E-11	<	9.372E-12
4:2 FTS	<	3.421E-11	<	9.372E-12
6:2 FTS		1.290E-10		2.546E-11
8:2 FTS	<	3.421E-11	<	9.372E-12
HFPO Dimer Acid		4.256E-06		1.048E-09

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for the first three analytical fractions of the target compound in order to develop emission concentrations.

## CHEMOURS - CHAMBERS WORKS

## SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

#### **TEST DATA**

IESI DATA				
Run number		1		2
		Carbon Drum		Carbon Drum
Location		Inlet		Outlet
Date		09/06/19		09/06/19
Time period		0953-1353		0953-1353
EMISSION RESULTS, lb/hr.				
Perfluorobutanoic acid (PFBA)		1.068E-03		6.926E-05
Perfluoropentanoic acid (PFPeA)		3.157E-05		6.871E-11
Perfluorohexanoic acid (PFHxA)		3.966E-08		1.978E-11
Perfluoroheptanoic acid (PFHpA)		1.975E-09	<	9.372E-09
Perfluorooctanoic acid (PFOA)	<	3.421E-08		1.046E-11
Perfluorononanoic acid (PFNA)	<	3.421E-08	<	9.372E-09
Perfluorodecanoic acid (PFDA)	<	3.421E-08	<	9.372E-09
Perfluoroundecanoic acid (PFUnA)	<	3.421E-08	<	9.372E-09
Perfluorododecanoic acid (PFDoA)	<	3.421E-08	<	9.372E-09
Perfluorotridecanoic acid (PFTriA)	<	3.421E-08	<	9.372E-09
Perfluorotetradecanoic acid (PFTeA)	<	3.421E-08	<	9.372E-09
Perfluorobutanesulfonic acid (PFBS)	<	3.421E-08	<	9.372E-09
Perfluoropentanesculfonic acid (PFPeS)	<	3.421E-08	<	9.372E-09
Perfluorohexanesulfonic acid (PFHxS)	<	3.421E-08	<	9.372E-09
Perfluoroheptanesulfonic acid (PFHpS)	<	3.421E-08	<	9.372E-09
Perfluorooctanesulfonic acid (PFOS)	<	3.421E-08	<	9.372E-09
Perfluorononanesulfonic acid (PFNS)	<	3.421E-08	<	9.372E-09
Perfluorodecanesulfonic acid (PFDS)	<	3.421E-08	<	9.372E-09
Perfluorooctanesulfonamide (FOSA)	<	3.421E-08	<	9.372E-09
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	3.421E-08	<	9.372E-09
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	3.421E-08	<	9.372E-09
4:2 FTS	<	3.421E-08	<	9.372E-09
6:2 FTS		1.290E-07		2.546E-08
8:2 FTS	<	3.421E-08	<	9.372E-09
HFPO Dimer Acid		4.256E-03		1.048E-06

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for the first three analytical fractions of the target compound in order to develop emission rates.

## CHEMOURS - CHAMBERS WORKS

## SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS BUILDING J-26 CARBON DRUM INLET AND OUTLET

#### **TEST DATA**

IESI DATA				
Run number		1		2
		Carbon Drum		Carbon Drum
Location		Inlet		Outlet
Date		09/06/19		09/06/19
Time period		0953-1353		0953-1353
EMISSION RESULTS, g/sec.				
Perfluorobutanoic acid (PFBA)		1.345E-04		8.720E-06
Perfluoropentanoic acid (PFPeA)		3.975E-06		8.651E-12
Perfluorohexanoic acid (PFHxA)		4.994E-09		2.490E-12
Perfluoroheptanoic acid (PFHpA)		2.486E-10	<	1.180E-09
Perfluorooctanoic acid (PFOA)	<	4.307E-09		1.317E-12
Perfluorononanoic acid (PFNA)	<	4.307E-09	<	1.180E-09
Perfluorodecanoic acid (PFDA)	<	4.307E-09	<	1.180E-09
Perfluoroundecanoic acid (PFUnA)	<	4.307E-09	<	1.180E-09
Perfluorododecanoic acid (PFDoA)	<	4.307E-09	<	1.180E-09
Perfluorotridecanoic acid (PFTriA)	<	4.307E-09	<	1.180E-09
Perfluorotetradecanoic acid (PFTeA)	<	4.307E-09	<	1.180E-09
Perfluorobutanesulfonic acid (PFBS)	<	4.307E-09	<	1.180E-09
Perfluoropentanesculfonic acid (PFPeS)	<	4.307E-09	<	1.180E-09
Perfluorohexanesulfonic acid (PFHxS)	<	4.307E-09	<	1.180E-09
Perfluoroheptanesulfonic acid (PFHpS)	<	4.307E-09	<	1.180E-09
Perfluorooctanesulfonic acid (PFOS)	<	4.307E-09	<	1.180E-09
Perfluorononanesulfonic acid (PFNS)	<	4.307E-09	<	1.180E-09
Perfluorodecanesulfonic acid (PFDS)	<	4.307E-09	<	1.180E-09
Perfluorooctanesulfonamide (FOSA)	<	4.307E-09	<	1.180E-09
N-methylperfluorooctanesulfonamidoaetic acid (NMeFOSAA)	<	4.307E-09	<	1.180E-09
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<	4.307E-09	<	1.180E-09
4:2 FTS	<	4.307E-09	<	1.180E-09
6:2 FTS		1.625E-08		3.205E-09
8:2 FTS	<	4.307E-09	<	1.180E-09
HFPO Dimer Acid		5.358E-04		1.319E-07

Note: All < values were below the laboratory analysis detection limits. The value shown is the sum of the method detection limit (MDL) value for the first three analytical fractions of the target compound in order to develop emission rates.

## APPENDIX A RAW AND REDUCED TEST DATA

# CHEMOURS - CHAMBERS WORKS INPUTS FOR TARGET COMPOUND CALCULATIONS BUILDING J-26 CARBON DRUM INLET AND OUTLET

Test Data		
Run number	1	2
Location	Carbon Drum Inlet	Carbon Drum Outlet
Date	09/06/19	09/06/19
Time period	0953-1353	0953-1353
Operator	MW/SR	MW/SR
Inputs For Calcs.		
Delta H	1.0000	1.0000
Meter temp. (deg.F)	75.3	74.4
Sample volume (act.)	131.605	127.625
Barometric press. (in.Hg)	29.87	29.87
Volume H <sub>2</sub> O imp. (ml)	62.0	56.0
Weight change sil. gel (g)	31.4	36.4
% CO <sub>2</sub>	0.2	0.2
$\% O_2$	1.0	0.8
$\%$ $N_2$	98.8	99.0
Sample time (min.)	240.0	240.0
Meter box cal.	0.9972	1.0073
Traverse Points	1	1

INLET

EPA Method 0010 - HFPO Dimer Acid

Page

of

ISOKINETIC FIELD DATA SHEET

#### 30 Client Chemours **Stack Conditions** Meter Box ID K Factor 0.9972 V W.O.# 15418.001.005.0001 Assumed Actual Meter Box Y Project ID Chemours % Moisture Meter Box Del H 271 Initial Mid-Point Final Mode/Source ID Carbon Drum Inlet 0.001 Impinger Vol (ml) Probe ID / Length Sample Train (ft3) <u>ठळ</u>ा A loc Samp. Loc. ID IN Silica gel (g) Probe Material Bero Telion Leak Check @ (in Ha) 015 010 Run No.ID 1 CO2. % by Vol Pitot / Thermocouple ID Pitot leak check good √ygor/no ves / no yes / no Test Method ID M0010 O2, % by Vol Pitot Coefficient 0.84 Pitot Inspection good (yens/no no / no yes / no 6SEP2019 Date ID Temperature (°F) Nozzle ID NA Method 3 System good yes / no ves / no yes / no Building J26 CD Inlet Meter Temp ("F) Source/Location Nozzie Measurements Temp Check Pre-Test Set Post-Test Set 9/06/19 ✓ Static Press (in H₂O) NR AV. Sample Date Avg Nozzle Dia (in) Meter Box Temp 70 70 Baro, Press (in Hg) 37 Area of Stack (ft2) Reference Temp 70 (N) アハレド(C) Ambient Temp (°F) Operator ⊽ Sample Time 240 Pass/Fail (+/- 2°) Pass / Fail Pas / Fall El Star Karryan **Total Traverse Pts** Temp Change Response 7 yes / no yes / no SAMPLE DRY GAS METER **CLOCK TIME** VELOCITY ORIFICE DGM OUTLET TEMP FILTER IMPINGER SAMPLE TRAVERSE STACK PROBE XAD EXIT COMMENTS TIME (min) (plant time) PRESSURE Delta PRESSURE READING (ft3) (°F) BOX TEMP **EXIT TEMP** TRAIN VAC POINT NO. TEMP (°F) TEMP (°F) TEMP (F) P (in H2O) Delta H (in H2O) (F) (oF) (in Hg) 0953 1 5 $_{x}\mathcal{O}$ 781.6 NA TE ZISAN 124 57 5.0 60 <u>Nn</u> 10 794.5 125 ح څک 0 53 5.0 <u>7. 0</u> 15 ブン 704 5,0 124 20 1.0 749 54 5~ <u>~~</u> 7 ã フマ 126 25 743.00 126 35 5,0 03 1.0 30 126 37 22 50 23 35 クタス、ひつ 26 5/ 54 510 40 ل کو 200°63 5 45 Ö 5.0 50 203 26 50 つご 1.0 ভত 306,10 スの 124 а 55 49 50 60 کے 65 $\Omega$ 274,07 71 70 216. CZ 2.7 500 75 019.4 シロ 80 S. 0 ζ3 129 85 CO 76 3.0 924.7 175 126 90 50 50 0 76 95 0 51 5.2 42 100 5 60 $\leq 0$ 105 834 50 110 836,96 115 0 23 5 120 25 5,0 43 125 846. حا Avg Delta P Ava Delta H Total Volume Min/Max Avg Ts Avg Tm Min/Max Max Max Vac Min/Max Avg Sgrt Delta P Ava Sart Del H Comments: EPA Method 0010 from EPA SW-846

INLET

ISOKINETIC FIELD DATA SHEET EPA Method 0010 - HFPO Dimer Acid Page Z of A

MR WINKELER Client Chemours Operator **Building J26** Run No. Source 9/06/19 K Factor CD Inlet Date Sample Loc. DRY GAS METER SAMPLE CLOCK TIME VELOCITY ORIFICE IMPING SAMPLE FLTER DGM OUTLET TEMP STACK PROBE XAD EXIT TRAVERSE READING (ft<sup>3</sup>) BOX TEMP EXIT TEMP TIME (min) (plant time) PRESSURE Delta PRESSURE TRAIN VAC COMMENTS TEMP (°F) TEMP (°F) POINT NO. (°F) TEMP (F) P (in H2O) Delta H (in H2O) (F) (°F) (in Hg) 9,46,310 125 130 849.25 NIB 5.0 5.0 135  $\mathfrak{d}$ 751,26 كخ 1 140 <u>2\_0</u> 48 145 257,60 20 5.0 260,54 150 50 <u>0</u> 2 155 160 , 0 260 10 165 <u>5.0</u> 5.0 170 ,A) 175 <u>2' 0</u> 50 180 877,40 50 . O 185 0 97 6,0 0. 190 GĠ ゴん 195 200 10 ð 490,90 393,75 <u>.0</u> 6.0 205 80 210 6.0 215 10 299 220 10 225 [0] Yes C 52 904.56 230 10 60 235 907.45 <u>53</u> 6,0 0 353√ 240 910,245 Avg Delta P Avg Delta H Total Volume Avg Ts 75.25 Min/Max Min/Max Max Temp Max Vac Max Temp 131.1005 G.IAvg Sqrt Del H | Comments: Avg Sgrt Delta P 0

ISOKINETIC FIELD DATA SHEET EPA Method 0010 - HFPO Dimer Acid Page Client **Stack Conditions** Chemours Meter Box ID K Factor W.O.# 0073 J 15418.001.005.0001 Assumed Actual Meter Box Y Project ID Chemours % Moisture Meter Box Del H 1.49 27 Mid-Point Initial Final Mode/Source ID Carbon Drum Outlet Impinger Vol (ml) Probe ID / Length WA Sample Train (ft<sup>3</sup>) 0,001 0.00 Samp, Loc. ID ועני 👭 Silica gel (g) Leak Check @ (in Hg) Probe Material Boro tetter 215 EID Run No.ID CO2. % by Vol Pitot / Thermocouple ID Pitot leak check good (yes)/ no yes / no Test Method ID M0010 O2, % by Vol Pitot Coefficient 0.84 Pitot Inspection good yes / no tes / no ves / no Temperature (°F) 6SEP2019 Date ID Nozzle ID WA Method 3 System good yes / no ves / no yes / no Building J26 CD Outlet Meter Temp (°F) Source/Location Nozzle Measurements Pre-Test Set Temp Check Post-Test Set 9/00/19 √ Static Press (in H₂O) Sample Date NA Avg Nozzle Dia (in) NA Meter Box Temp 1907 Baro. Press (in Hg) Area of Stack (ft2) Reference Temp (°F) 240 Operator Sample Time Pass/Fail (+/- 2°) Pase / Fall Pas / Fall STEVE RATIFIEDA vee / no Total Traverse Pts ves / no Temp Change Response 7 SAMPLE DRY GAS METER DGM OUTLET TEMP **CLOCK TIME** VELOCITY ORIFICE FILTER IMPINGER SAMPLE **TRAVERSE** STACK PROBE XAD EXIT COMMENTS TIME (min) PRESSURE Delta (plant time) PRESSURE READING (ft3) (°F) BOX TEMP **EXIT TEMP** TRAIN VAC POINT NO. TEMP (°F) TEMP (°F) TEMP (F) P (in H2O) Delta H (in H2O) Œ (oF) (in Ha) 0953 V 11.8.545 5 NA NA 125 10 171.5 63 WA 70 10 174.6 7 D 125 62 15 1769 1.0 127 60 62 つて 20 .O 176 60 70 72 61 25 0 2.10 64 158 7.0 30 . 3 7 35 .0 3 D 7,0 40 0 27 45 0 24 50 24 56 7.0 62 55 C صاخ 乙じ らこ 60  $\overline{\Omega}$ 76 フィロ 65 202,60 76  $\boldsymbol{\circ}$ 7.7 70 D 125 30 りし 8 43 75 80 Ŏ 210 2 7-0 6.00) 85 125 1.0 7 7.0 6 90 L.O 215.42 7.c ī. O 95 10 U 100 O. ,51 100 6 105 7.0 QO. 110 0 115 U K O 120 60 5 7,0 ろし 125 100 V Avg Delta P Avg Delta H Min/Max otal Volume Avg Ts Avg Tm Min/Max Max Vac Min/Max Avg Sqrt Del H | Comments: Avg Sgrt Delta P EPA Method 0010 from EPA SW-846

outlet

outre

ISOKINETIC FIELD DATA SHEET

Client Chemours Operator P WZNVECEP

Operator Run No.

Chemours Building J26 CD Outlet

Source Sample Loc.

EPA Method 0010 - HFPO Dimer Acid

Page 2 of 2

	DGM OUTLET TEMP PROBE FILTER IMPING SAMPLE XAD EXIT (°F) (F) (°F) (In Hg)	99 012 125 CSI 751 CT	77 NA 127 SK 7.0 K	_	1 0.5 12 121 1 50	09 0% 15 421 1 16	0.1 0.7   22   1.21     2.7	135 56 7.0	135 58 7.0	74 125 58 70 62	0,5   58   7,0	156 SS 10	0.7	19 16.6 SS JABI 1 17.	0,6	2) C/C h5   921   1   1C	C'4 FS	ر ر		20 10 10 10		70 175 55 7,0 60	7,0	01 CT 38 CKI J CT			Avg Tm Min/Max Min/Max Max Temp Max Vac Max Temp
9/56/19 K Factor	METER STACK G (ft³) TEMP (°F)	1/M 03.363 C.I	7 237.80	(42)	1.0 243 75 1		1.0 249.42	752.1	スタヤ	1.0 257.60	700°	1,0 263.20	Sak	12kg		774	Oq.9CZ   O.1	259	1.0 282,55	1,0 235.40 1	47	2 84.	~	1			Avg Delta H Total Volume Avg Ts
Kun No. Date	VELOCITY PRESSURE Delta P (in H2O)	NA		1																				2,			Avg Delta P
Sample Loc. CD Outlet	SAMPLE CLOCK TIME TRAVERSE TIME (min) (plant time) 125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	+	240 1253			

Avg Sqrt Del H Comments:

## Source Gas Analysis Data Sheet - Modified Method 3/3A

Client_	Chemberson	_	Analyst	<u>SL</u>	
			Date		
Source	J-26 Inle	et/outlest Analy	zer Make & Model	Servonex	1440
W.O. Number_					
	Calibration	1130 - 1145			
Analysis		Calibration Gas Value	Calibration Gas	Analyzer	Analyzer
Number	Span	O <sub>2</sub> (%)	Value CO <sub>2</sub> (%)	Response O <sub>2</sub> (%)	Response CO <sub>2</sub> (%)
1	Zero	0	0	0	0
2	Mid	12.0	8.9	119	9.0
3	High	21.2	16.8	21.2	168

	Run Number	Analysis Time	Analyzer Response O <sub>2</sub> (%)	Analyzer Response CO <sub>2</sub> (%)
Inlet.	~ <i>;</i> ~} (	1902	1.01	0.21
outlet.	- 21	1405	0.81	0.21
	3			
		Average		

Run Number	Analysis Time	Analyzer Response O <sub>2</sub> (%)	Analyzer Response CO <sub>2</sub> (%)
1			
2			
3			
	Average		

Span	Cylinder ID					
Mid	CC 180.55					
High	6618531					



<sup>\*\*</sup>Report all values to the nearest 0.1 percent

### SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client		Chen	nours		W.O. #		15418.00	1.005.0001		
Location/Pla	ant _	Chambe	rs Works	Source	& Location		Building J2			<u>-</u>
Run No.	1 Sample Date 4/6/19 Recovery Date			ry Date	9/6/10					
Sample I.D.	Chemours - 0	Carbon Drum Inl	et - IN - 1 - M001	0 -	Analyst	SR	_	Filter Number		
			****	·	Imping	er				
[	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final	66	94	100	2				262	33 [	ή
Initial	٥	100	100	0				1,	300	1
Gain	66	-6		2				162	31.4	
Impinger Cold	or _	clear			Labeled?					_
Silica Gel Co	ndition	HAIF	Blu C		Sealed?					•
Run No. 2 Sample Date Recovery Date					ry Date					
Sample I.D. Chemours - Carbon Drum Inlet - IN - 2 - M0010 -			0 -	Analyst Filter Number						
				imping	er			····		
	11	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final					<u> </u>					
Initial		100	100						300	
Gain										
Impinger Cold	or				Labeled?					
Silica Gel Co	ndition		·		Sealed?	-				
Run No.	3				Sample Date		•	Recove	ry Date	
Sample I.D.	Chemours - C	Carbon Drum Inl	et - IN - 3 - M001	0 -	Analyst			Filter N	umber	
					Imping					
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final									-	
Initial		100	100						300	
Gain										
Impinger Cold	or		_		Labeled?			=		
Silica Gel Cor	Silica Gel Condition Sealed?									

Check COC for Sample IDs of Media Blanks



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27

### SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client		Chem			W.O.#			1.005.0001		_
Location/Pla	int	Chamber	s Works	Sour	ce & Location		Building J20	6 CD Outlet		
Run No.	_1_				Sample Date	9/6/19	<u>i</u>	Recove	ry Date	9/4/19
Sample I.D.	Chemours - 0	Carbon Drum O	utlet - IN - 1 - M0	010 -	Analyst	5E_	-	Filter N	lumber	
					Imping	er				
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final	14	80	166	2					336.4	
Initial	Ó	100	100	0					300	
Gain	74	-20	0	2				156	136.4	
Impinger Cold	or <u> </u>	Clent			Labeled?					
Silica Gel Co	ndition	1/26/02	<u></u>		Sealed?					•
Run No.	2				Sample Date		_	Recove	ry Date	
Sample I.D.	Chemours - 0	Carbon Drum O	utlet - IN - 2 - M0	010 -	Analyst Filter Number					
				Impinger						
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final										
Initial		100	100						300	
Gain										
Impinger Cold	or				Labeled?					
Silica Gel Co	ndition				Sealed?					•
			· · · ·							
Run No.					Sample Date	Sample Date Recovery Date				
Sample I.D.	Chemours - 0	Carbon Drum O	utlet - IN - 3 - M0	010 -	Analyst			Filter N	umber	
		1 0		I 4	Imping		T	I loo o T-4-1		T-1-1
Contents	1 Empty	2 HPLC H20	3 HPLC H20	4	5	6	7	Imp.Total	8 Silica Gel	Total
Final	Linpty	111 20 1120	TH LOTIEU						Silica Gel	
Final   Initial		100	100						200	
		100	100						300	
Gain		<u></u>		L	1 -1-1-10					
Impinger Cok	_		_		Labeled?					•
Silica Gel Co	naition		<del>_</del>		Sealed?	-		···		

Check COC for Sample IDs of Media Blanks

WESTEN

Balance Calibration

I - 500 g serial # 69647

E- 499.9

### SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client	_	Chem	nours		W.O.#		15418.00	1.005.0001		. , .
Location/Pla	ant _	Chamber	s Works	Source	& Location		Building J2	6 CD Jalet	S/GNK	frair
Run No. 1 Blankton				Sample Date	9/6/1	19	Recove	ry Date	9/6/19	
Sample I.D.	Chemours - 0	Carbon Drum In	ef - IN - 1 - M001	0 -	Analyst		-	Filter N	lumber	
				<b>7</b> ***	Imping	Impinger				
	1	2	3	4	5	6	7	Imp.Total	- 8	Total
Contents	Empty	HPLC H20	HPLC H20	·					Silica Gel	
Final	δ	160	100					280	3000	
Initial	0	100	100					2-00	300	
Gain	0	0	0					0	0	
Impinger Cold	or <u> </u>	Gfen			Labeled?	/		····		
Silica Gel Co	ndition	1/2 Blu	<u>_</u>		Sealed?					
Run No.	2			;	Sample Date		_	Recove	ry Date	
Sample I.D. Chemours - Carbon Drum Inlet - IN - 2 - M0010 -			0 -	Analyst Filter Number						
					Imping	er				
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final										
Initial	:	100	100						300	
Gain										
Impinger Cold	or		_		Labeled?					
Silica Gel Cor	ndition	·			Sealed?					
Run No.	3_				Sample Date			Recove	ry Date	
Sample I.D.	Sample I.D. Chemours - Carbon Drum Inlet - IN - 3 - M0010 -				Analyst		•	Filter N	lumber	
Ì ,		,			Imping	er	•			
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final										
Initial		100	100						300	
Gain										
Impinger Cold	or _		_		Labeled?					
Silica Gel Cor	ndition				Sealed?					

Check COC for Sample IDs of Media Blanks



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## APPENDIX B LABORATORY ANALYTICAL REPORT



### **ANALYTICAL REPORT**

Job Number: 140-16583-1

Job Description: Building J-26 Inlet - Method 0010

Contract Number: LBIO-67048

For:

Chemours Company FC, LLC The c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Lowered Ackins

Approved for release Courtney M Adkins Project Manager II

Courtney M Adkins, Project Manager II 5815 Middlebrook Pike, Knoxville, TN, 37921 (865)291-3000 courtney.adkins@testamericainc.com 11/04/2019

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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Standards Data	
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Raw QC Data	
Method DV-LC-0012 Tune Data	
Method DV-LC-0012 Run Logs	
Method DV-LC-0012 Prep Data	
Method PFC IDA	
Method PFC IDA QC Summary	
Method PFC IDA Sample Data	
Standards Data	
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## **Definitions/Glossary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010 Job ID: 140-16583-1

## **LCMS**

Qualifiers

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	Isotope Dilution analyte is outside acceptance limits.
В	Compound was found in the blank and sample.
CI	The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
E	Result exceeded calibration range.
Н	Sample was prepped or analyzed beyond the specified holding time
1	Value is EMPC (estimated maximum possible concentration).

## Glossary

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## **Method Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
8321A	HFPO-DA	SW846	TAL DEN
8321A	PFOA and PFOS	SW846	TAL DEN
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL DEN
None	Leaching Procedure for Condensate	TAL SOP	TAL DEN
None	Leaching Procedure for XAD	TAL SOP	TAL DEN
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL DEN
Split	Source Air Split	None	TAL SAC

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### **Laboratory References:**

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 140-16583-1

## **Sample Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Lab Sample ID **Client Sample ID** Matrix Collected Received **Asset ID** 09/06/19 00:00 09/09/19 18:35 140-16583-1 D-1727,1728 BLDG J-26 INLET R1 M0010 FH Air 140-16583-2 09/06/19 00:00 09/09/19 18:35 D-1729,1730,1732 BLDG J-26 INLET R1 M0010 Air 140-16583-3 09/06/19 00:00 09/09/19 18:35 D-1731 BLDG J-26 INLET R1 M0010 IMPINGER Air 1,2&3 CONDENSATE 09/06/19 00:00 09/09/19 18:35 140-16583-4 Air D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Job ID: 140-16583-1

## Job Narrative 140-16583-1

#### Sample Receipt

The samples were received on September 9, 2019 at 6:35 PM. The temperatures of the 2 coolers at receipt time were 2.3° C and 7.0° C.

#### **Quality Control and Data Interpretation**

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

#### **Receipt Exceptions**

The following samples were received at the laboratory outside the required temperature criteria: D-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16583-2) and D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16583-4).

#### Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

#### **LCMS**

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: D-1727,1728 BLDG J-26 INLET R1 M0010 FH (140-16583-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: D-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16583-2) and D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16583-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte. D-1727,1728 BLDG J-26 INLET R1 M0010 FH (140-16583-1)

Method 537 (modified): Results for samples D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3) were reported from the analysis of a diluted extract due to matrix interference. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFBA: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for several IDA in the following sample: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Due to severe matrix interference in the original extracts, the following samples required a 2000X dilution: D-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16583-2) and D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16583-4). Internal standard and isotope dilution analyte solutions were refortified into the extracts after dilution so quantitation could be performed.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for several IDA in the following sample: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Due to exceedingly high concentrations of Perfluorobutanoic acid (PFBA) in the original extracts, the following samples required a 500000X dilution: D-1729,1730,1732 BLDG J-26 INLET R1 M0010 BH (140-16583-2) and D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16583-4). Internal standard and isotope dilution analyte solutions were refortified

into the extracts after dilution so quantitation could be performed.

Method 537 (modified): Due to exceedingly high concentrations of Perfluorobutanoic acid (PFBA) in the original extracts, the following sample required a 50000X dilution: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). Internal standard and isotope dilution analyte solutions were refortified into the extracts after dilution so quantitation could be performed.

Method 537 (modified): Reanalysis of the following samples were performed outside of the analytical holding time due to very high level of analyte requiring complex dilution: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3).

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-333047/11)

Method 537 (modified): The concentration Perfluoropentanoic acid (PFPeA) associated with the following sample exceeded the instrument calibration range: D-1731 BLDG J-26 INLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16583-3). These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The following sample has chromatographic interferences that could adversely impact the identification and quantitation of Perfluoropentanoic acid (PFPeA): D-1727,1728 BLDG J-26 INLET R1 M0010 FH (140-16583-1) These interferences could cause high biased results.

Method 537 (modified): The following sample has chromatographic interferences that could adversely impact the identification and quantitation of Perfluoropentanoic acid (PFPeA): D-1733 BLDG J-26 INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16583-4) These interferences could caused high biased results.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

## **QC Association Summary**

Client: Chemours Company FC, LLC The Job ID: 140-16583-1 Project/Site: Building J-26 Inlet - Method 0010

#### LCMS

	Pre	p Batc	h: 32	22271
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3 - DL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	None	
140-16583-3	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	None	
MB 320-322271/1-B	Method Blank	Total/NA	Air	None	
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 322277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method F	Prep Batch
140-16583-3	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	Preparation	322271
140-16583-3 - DL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	Preparation	322271
MB 320-322271/1-B	Method Blank	Total/NA	Air	Preparation	322271
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	Preparation	322271

#### **Prep Batch: 322674**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	
MB 320-322674/1-C	Method Blank	Total/NA	Air	None	
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	None	

#### **Prep Batch: 322675**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2 - DL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	_
140-16583-2	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	
140-16583-4 - DL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
140-16583-4	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
MB 320-322675/1-C	Method Blank	Total/NA	Air	None	
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 323028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	322674
MB 320-322674/1-C	Method Blank	Total/NA	Air	Split	322674
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	Split	322674

## Cleanup Batch: 323620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2 - DL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	322675
140-16583-2	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	322675
140-16583-4 - DL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	322675
140-16583-4	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Split	322675
MB 320-322675/1-C	Method Blank	Total/NA	Air	Split	322675
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	Split	322675

#### **Analysis Batch: 323650**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	537 (modified)	322277
MB 320-322271/1-B	Method Blank	Total/NA	Air	537 (modified)	322277
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	322277

#### Cleanup Batch: 323681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Preparation	323028

## **QC Association Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

## LCMS (Continued)

Cleanup Batch: 3	323681 (Continued)			
I ab Sample ID	Client Sample ID	Pren Tyne	Matrix	Method

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-322674/1-C	Method Blank	Total/NA	Air	Preparation	323028
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	Preparation	323028

#### Cleanup Batch: 324371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Preparation	323620
140-16583-2 - DL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Preparation	323620
140-16583-4	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Preparation	323620
140-16583-4 - DL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Preparation	323620
MB 320-322675/1-C	Method Blank	Total/NA	Air	Preparation	323620
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	Preparation	323620

#### **Analysis Batch: 327176**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-322674/1-C	Method Blank	Total/NA	Air	537 (modified)	323681
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	323681

#### **Analysis Batch: 327179**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-322675/1-C	Method Blank	Total/NA	Air	537 (modified)	324371
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	324371

#### **Analysis Batch: 331431**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	537 (modified)	332311
140-16583-4	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	537 (modified)	332311

#### **Analysis Batch: 331436**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	537 (modified)	332311

#### Cleanup Batch: 332311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Dilution	323681
140-16583-2	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Dilution	324371
140-16583-2 - DL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Dilution	324371
140-16583-4	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Dilution	324371
140-16583-4 - DL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	Dilution	324371

#### **Analysis Batch: 332349**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method F	Prep Batch
140-16583-2 - DL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	537 (modified)	332311
140-16583-4 - DL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	537 (modified)	332311

#### Cleanup Batch: 333070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3 - DL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	Dilution	322277

#### **Analysis Batch: 333151**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3 - DL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	537 (modified)	333070

Job ID: 140-16583-1

## **QC Association Summary**

Client: Chemours Company FC, LLC The

Client Sample ID

D-1731 BLDG J-26 INLET R1 M0010 IMPINGER Total/NA

Project/Site: Building J-26 Inlet - Method 0010

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	-		-
	-	N/	

Lab Sample ID

140-16583-3 - RADL

LCMS					
Analysis Batch: 4645	589				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-464589/13	Lab Control Sample	Total/NA	Air	8321A	
Prep Batch: 471573					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1 - REDL	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	None	
Prep Batch: 471574					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2 - REDL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	None	<u>-</u>
140-16583-4 - REDL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	None	
Cleanup Batch: 4715	94				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1 - REDL	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	Split	471573
Cleanup Batch: 4715	97				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-2 - REDL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	Split	471574
140-16583-4 - REDL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHI	Total/NA	Air	Split	471574
Analysis Batch: 4718	851				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-1 - REDL	D-1727,1728 BLDG J-26 INLET R1 M0010 FH	Total/NA	Air	8321A	471594
140-16583-2 - REDL	D-1729,1730,1732 BLDG J-26 INLET R1 M0010	Total/NA	Air	8321A	471597
140-16583-4 - REDL	D-1733 BLDG J-26 INLET R1 M0010 BREAKTHF	Total/NA	Air	8321A	471597
Prep Batch: 472045					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3 - RADL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	None	
Cleanup Batch: 4720	50				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16583-3 - RADL	D-1731 BLDG J-26 INLET R1 M0010 IMPINGER	Total/NA	Air	Split	472045

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Method

8321A

Prep Type

Matrix

Air

**Prep Batch** 

472050

Job ID: 140-16583-1

Client: Chemours Company FC, LLC The Job ID: 140-16583-1 Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: D-1727,1728 BLDG J-26 INLET R1 M0010 FH Lab Sample ID: 140-16583-1

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Method: 537 (modified) - Fluoi Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	220000	B CI	1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluoropentanoic acid (PFPeA)	7610		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluorohexanoic acid (PFHxA)	2330	1	1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluoroheptanoic acid (PFHpA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluorooctanoic acid (PFOA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluorononanoic acid (PFNA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorodecanoic acid (PFDA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluoroundecanoic acid (PFUnA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorododecanoic acid (PFDoA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorotridecanoic acid (PFTriA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluorotetradecanoic acid (PFTeA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorobutanesulfonic acid (PFBS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorohexanesulfonic acid (PFHxS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	,
Perfluorodecanesulfonic acid (PFDS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
Perfluorooctanesulfonic acid (PFOS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorooctanesulfonamide (FOSA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluoropentanesulfonic acid (PFPeS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Perfluorononanesulfonic acid (PFNS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
N-ethylperfluorooctanesulfonamidoac	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
etic acid (NEtFOSAA)							. 00/10/10/10/10/10	. 19119119 12 99.	
4:2 FTS	ND		1000		ng/Sample			10/16/19 17:03	•
6:2 FTS	ND		1000		ng/Sample			10/16/19 17:03	•
8:2 FTS	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 17:03	•
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	96		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C4 PFBA	83		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C5 PFPeA	91		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C2 PFHxA	76		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C4 PFHpA	97		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C4 PFOA	97		25 - 150				09/12/19 12:45	10/16/19 17:03	
13C5 PFNA	95		25 - 150				09/12/19 12:45	10/16/19 17:03	
13C2 PFDA	99		25 - 150				09/12/19 12:45	10/16/19 17:03	7
13C2 PFUnA	99		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C2 PFDoA	91		25 - 150				09/12/19 12:45	10/16/19 17:03	
13C2 PFTeDA	99		25 - 150				09/12/19 12:45	10/16/19 17:03	•
1802 PFHxS	92		25 - 150				09/12/19 12:45	10/16/19 17:03	•
13C4 PFOS	92		25 - 150				09/12/19 12:45	10/16/19 17:03	
d3-NMeFOSAA	109		25 - 150				09/12/19 12:45	10/16/19 17:03	•
d5-NEtFOSAA	110		25 - 150				09/12/19 12:45	10/16/19 17:03	•
M2-4:2 FTS	95		25 - 150				09/12/19 12:45	10/16/19 17:03	
M2-6:2 FTS	110		25 - 150				09/12/19 12:45	10/16/19 17:03	
M2-8:2 FTS	104		25 - 150				09/12/19 12:45	10/16/19 17:03	

Client: Chemours Company FC, LLC The Job ID: 140-16583-1

Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: D-1727,1728 BLDG J-26 INLET R1 M0010 FH

Lab Sample ID: 140-16583-1

Lab Sample ID: 140-16583-2

**Matrix: Air** 

Date Collected: 09/06/19 00:00 Date Received: 09/09/19 18:35 **Sample Container: Air Train** 

Method: 8321A - PFOA and PF	OS - REDL							
Analyte	Result	Qualifier	RL	MDL Unit	t D	Prepared	Analyzed	Dil Fac
HFPO-DA	804	Н	25.0	2.70 ug/S	Sample	09/23/19 15:15	09/25/19 12:08	10
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	96	D	50 - 200			09/23/19 15:15	09/25/19 12:08	10

Client Sample ID: D-1729,1730,1732 BLDG J-26 INLET R1

M0010 BH

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND	*	1000	980	ng/Sample	_	09/12/19 12:45	10/16/19 14:59	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorooctanoic acid (PFOA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorononanoic acid (PFNA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorodecanoic acid (PFDA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorododecanoic acid (PFDoA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorooctanesulfonamide (FOSA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1000		ng/Sample		09/12/19 12:45	10/16/19 14:59	1
Perfluorononanesulfonic acid (PFNS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		1000		ng/Sample		09/12/19 12:45	10/16/19 14:59	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		1000		ng/Sample			10/16/19 14:59	1
4:2 FTS	ND		1000		ng/Sample			10/16/19 14:59	1
6:2 FTS	2190		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
8:2 FTS	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 14:59	1
sotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	96		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C2 PFHxA	30		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C4 PFHpA	91		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C4 PFOA	97		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C5 PFNA	106		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C2 PFDA	102		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C2 PFUnA	117		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C2 PFDoA	92		25 - 150				09/12/19 12:45	10/16/19 14:59	1
13C2 PFTeDA	119		25 - 150				09/12/19 12:45	10/16/19 14:59	1
1802 PFHxS	87		25 - 150				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10/16/19 14:59	1

Eurofins TestAmerica, Knoxville

Client: Chemours Company FC, LLC The Job ID: 140-16583-1

Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: D-1729,1730,1732 BLDG J-26 INLET R1

M0010 BH

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

N	Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)							
I:	sotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	
1	3C4 PFOS	107		25 - 150	09/12/19 12:45	10/16/19 14:59	1	
a	I3-NMeFOSAA	119		25 - 150	09/12/19 12:45	10/16/19 14:59	1	
a	15-NEtFOSAA	119		25 - 150	09/12/19 12:45	10/16/19 14:59	1	
٨	12-4:2 FTS	79		25 - 150	09/12/19 12:45	10/16/19 14:59	1	

M2-6:2 FTS 108 25 - 150 09/12/19 12:45 10/16/19 14:59
M2-8:2 FTS 104 25 - 150 09/12/19 12:45 10/16/19 14:59

Method: 537 (modified) - Fluo	rinated Alky	/I Substan	ces - DL						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	31300000	B *	250000	245000	ng/Sample		09/12/19 12:45	10/20/19 15:34	1
Perfluoropentanoic acid (PFPeA)	1560000	В	250000	245000	ng/Sample		09/12/19 12:45	10/20/19 15:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150				09/12/19 12:45	10/20/19 15:34	1
13C5 PFPeA	92		25 - 150				09/12/19 12:45	10/20/19 15:34	1

Method: 8321A - PFOA and P	FOS - REDL							
Analyte	Result	Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	144000	Н	2000	400 ug/Sample	_	09/23/19 11:36	09/25/19 12:12	50
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	103	D	50 - 200			09/23/19 11:36	09/25/19 12:12	50

Client Sample ID: D-1731 BLDG J-26 INLET R1 M0010 Lab Sample ID: 140-16583-3

**IMPINGER 1,2&3 CONDENSATE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	196000	E	50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorohexanoic acid (PFHxA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluoroheptanoic acid (PFHpA)	116		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorooctanoic acid (PFOA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorononanoic acid (PFNA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorodecanoic acid (PFDA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluoroundecanoic acid (PFUnA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorododecanoic acid (PFDoA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorotridecanoic acid (PFTriA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorotetradecanoic acid (PFTeA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorobutanesulfonic acid (PFBS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorohexanesulfonic acid (PFHxS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluoroheptanesulfonic Acid (PFHpS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorodecanesulfonic acid (PFDS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorooctanesulfonic acid (PFOS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorooctanesulfonamide (FOSA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100

Client: Chemours Company FC, LLC The Job ID: 140-16583-1 Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: D-1731 BLDG J-26 INLET R1 M0010

**IMPINGER 1,2&3 CONDENSATE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Perfluorononanesulfonic acid (PFNS)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	10
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
4:2 FTS	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
6:2 FTS	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
8:2 FTS	ND		50.7	49.7	ng/Sample		09/11/19 09:00	09/15/19 16:50	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	139		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C5 PFPeA	34		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C2 PFHxA	34		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C4 PFHpA	49		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C4 PFOA	90		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C5 PFNA	189	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C2 PFDA	165	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C2 PFUnA	147		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C2 PFDoA	143		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C2 PFTeDA	140		25 - 150				09/11/19 09:00	09/15/19 16:50	100
1802 PFHxS	56		25 - 150				09/11/19 09:00	09/15/19 16:50	100
13C4 PFOS	163	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
d3-NMeFOSAA	178	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
d5-NEtFOSAA	157	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
M2-4:2 FTS	130		25 - 150				09/11/19 09:00	09/15/19 16:50	100
M2-6:2 FTS	130		25 - 150				09/11/19 09:00	09/15/19 16:50	100
M2-8:2 FTS	214	*	25 - 150				09/11/19 09:00	09/15/19 16:50	100
Method: 537 (modified) - Fluo	rinated Alky	/I Substan	ces - DL						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	440000	НВ	25300	24800	ng/Sample		09/11/19 09:00	10/24/19 00:24	•
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150				09/11/19 09:00	10/24/19 00:24	
Method: 8321A - HFPO-DA - F									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
HFPO-DA	48300	Н	1260	64.5	ug/Sample		09/26/19 15:00	10/02/19 11:24	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	65	D	50 - 200				09/26/19 15:00	10/02/19 11:24	50

Client: Chemours Company FC, LLC The Job ID: 140-16583-1

Project/Site: Building J-26 Inlet - Method 0010

### Client Sample ID: D-1733 BLDG J-26 INLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	91100		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorohexanoic acid (PFHxA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorooctanoic acid (PFOA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorononanoic acid (PFNA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorodecanoic acid (PFDA)	ND	*	1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorododecanoic acid (PFDoA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluoroheptanesulfonic Acid	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
(PFHpS) Perfluorodecanesulfonic acid (PFDS)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1000		-			10/16/19 15:08	,
Perfluorooctanesulfonamide (FOSA)	ND		1000					10/16/19 15:08	
	ND ND		1000		ng/Sample			10/16/19 15:08	,
Perfluoropentanesulfonic acid (PFPeS)									
Perfluorononanesulfonic acid (PFNS)	ND		1000		ng/Sample			10/16/19 15:08	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
4:2 FTS `	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
6:2 FTS	5390		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
8:2 FTS	ND		1000	980	ng/Sample		09/12/19 12:45	10/16/19 15:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	108		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C5 PFPeA	34		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C2 PFHxA	80		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C4 PFHpA	96		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C4 PFOA	97		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C5 PFNA	111		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C2 PFDA	118		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C2 PFUnA	124		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C2 PFDoA	123		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C2 PFTeDA	120		25 - 150				09/12/19 12:45	10/16/19 15:08	
1802 PFHxS	88		25 - 150				09/12/19 12:45	10/16/19 15:08	1
13C4 PFOS	109		25 - 150				09/12/19 12:45	10/16/19 15:08	1
d3-NMeFOSAA	122		25 - 150				09/12/19 12:45	10/16/19 15:08	
d5-NEtFOSAA	128		25 - 150				09/12/19 12:45	10/16/19 15:08	1
M2-4:2 FTS	96		25 - 150					10/16/19 15:08	1
M2-6:2 FTS	109		25 <sub>-</sub> 150					10/16/19 15:08	
M2-8:2 FTS	118		25 - 150 25 - 150					10/16/19 15:08	1

Client: Chemours Company FC, LLC The Job ID: 140-16583-1

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Inlet - Method 0010

Client Sample ID: D-1733 BLDG J-26 INLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	30800000	B *	250000	245000	ng/Sample		09/12/19 12:45	10/20/19 15:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150				09/12/19 12:45	10/20/19 15:43	1
Method: 8321A - PFOA and I Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte HFPO-DA	Result 56900		RL 400		Unit ug/Sample	_ <b>D</b>	Prepared 09/23/19 11:36	Analyzed 09/25/19 12:15	Dil Fac
REPU-IJA				00.0	ag, campio		00/20/10 11.00	00/20/10 12:10	
пгро-да	00000								
Surrogate	%Recovery		Limits				Prepared	Analyzed	Dil Fac

### **Default Detection Limits**

Client: Chemours Company FC, LLC The

Project/Site: Building J-26 Inlet - Method 0010

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Prep: None** 

Analyte	RL	MDL	Units	
4:2 FTS	0.500	0.490	ng/Sample	
6:2 FTS	0.500	0.490	ng/Sample	
8:2 FTS	0.500	0.490	ng/Sample	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample	
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample	
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample	
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample	
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample	
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample	
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample	
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample	
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample	
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample	
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample	
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample	
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample	
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample	
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample	
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample	
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample	
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample	

Method: 8321A - HFPO-DA

Prep: None

ſ	Analyte	RL	MDL	Units
	HFPO-DA	0.00250	0.00128	ug/Sample

Method: 8321A - PFOA and PFOS

**Prep: None** 

Analyte	RL	MDL	Units
HFPO-DA	0.0250	0.00270	ug/Sample
HFPO-DA	0.100	0.0200	ug/Sample

Job ID: 140-16583-1



## **ANALYTICAL REPORT**

Job Number: 140-16584-1

Job Description: Building J-26 Outlet - M0010

Contract Number: LBIO-67048

For:

Chemours Company FC, LLC The c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Lowwelf Ackins

Approved for release Courtney M Adkins Project Manager II

Courtney M Adkins, Project Manager II 5815 Middlebrook Pike, Knoxville, TN, 37921 (865)291-3000 courtney.adkins@testamericainc.com 11/04/2019

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## **Definitions/Glossary**

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

## Qualifiers

	$\sim$	NЛ	C
_	U	IVI	J

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
В	Compound was found in the blank and sample.
1	Value is EMPC (estimated maximum possible concentration).
X	Surrogate is outside control limits

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## **Method Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
8321A	HFPO-DA	SW846	TAL DEN
8321A	PFOA and PFOS	SW846	TAL DEN
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL DEN
None	Leaching Procedure for Condensate	TAL SOP	TAL DEN
None	Leaching Procedure for XAD	TAL SOP	TAL DEN
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL DEN
Split	Source Air Split	None	TAL SAC

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### **Laboratory References:**

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 140-16584-1

## **Sample Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

Lab Sample ID **Client Sample ID** Matrix Collected Received Asset ID E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH Air 09/06/19 00:00 09/09/19 18:35 140-16584-1 140-16584-2 Air 09/06/19 00:00 09/09/19 18:35 E-2929,2930,2932 BLDG J-26 OUTLET R1 140-16584-3 09/06/19 00:00 09/09/19 18:35 E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE Air 1,2&3 CONDENSATE 140-16584-4 09/06/19 00:00 09/09/19 18:35 Air E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Job ID: 140-16584-1

#### Job Narrative 140-16584-1

#### Sample Receipt

The samples were received on September 9, 2019 at 6:35 PM. The temperatures of the 2 coolers at receipt time were 2.3° C and 7.0° C.

#### **Quality Control and Data Interpretation**

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

#### **Receipt Exceptions**

The following samples were received at the laboratory outside the required temperature criteria: E-2929,2930,2932 BLDG J-26 OUTLET R1 M0010 BH (140-16584-2) and E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16584-4). The client was contacted regarding this issue, and the laboratory was instructed to <CHOOSE ONE> proceed with analysis.

#### Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

#### **LCMS**

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16584-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH (140-16584-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: E-2929,2930,2932 BLDG J-26 OUTLET R1 M0010 BH (140-16584-2) and E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16584-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 537 (modified): The method blank for preparation batch 320-322675, 320-323620 and 320-324371 and analytical batch 320-327179 contained several analytes above the reporting limit (RL). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-322675, 320-323620 and 320-324371 and analytical batch 320-327179 recovered outside control limits for several analytes. There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte. E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH (140-16584-1)

Method 537 (modified): The method blank for preparation batch 320-322674, 320-323028 and 320-323681 and analytical batch 320-327176 contained Perfluorobutanoic acid (PFBA) above the reporting limit (RL). Associated samples were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C4 PFBA: E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH (140-16584-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Method 537 (modified): The method blank for preparation batch 320-322271 and 320-322277 and analytical batch 320-323650 contained Perfluorobutanoic acid (PFBA) above the reporting limit (RL). Associated samples were not re-extracted and re-analyzed due to limited sample volume.

Method 537 (modified): Results for samples E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGER 1,2&3 CONDENSATE (140-16584-3) were reported from the analysis of a diluted extract due to matrix interference. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): Due to severe matrix interference in the original extracts, the following samples required a 1000X dilution: E-2929,2930,2932 BLDG J-26 OUTLET R1 M0010 BH (140-16584-2) and E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16584-4). Internal standard and isotope dilution analyte solutions were refortified into the extracts after dilution so quantitation could be performed.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C5 PFPeA: E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16584-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Method 537 (modified): Due to exceedingly high concentrations of Perfluorobutanoic acid (PFBA) in the original extracts, the following samples required a 20000X dilution: E-2929,2930,2932 BLDG J-26 OUTLET R1 M0010 BH (140-16584-2) and E-2933 BLDG J-26 OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-16584-4). Internal standard and isotope dilution analyte solutions were refortified into the extracts after dilution so quantitation could be performed.

#### Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

## **QC Association Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

#### LCMS

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	None	
MB 320-322271/1-B	Method Blank	Total/NA	Air	None	
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 322277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	Preparation	322271
MB 320-322271/1-B	Method Blank	Total/NA	Air	Preparation	322271
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	Preparation	322271

#### **Prep Batch: 322674**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	None	
MB 320-322674/1-C	Method Blank	Total/NA	Air	None	
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	None	

#### **Prep Batch: 322675**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2 - DL	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	None	
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	None	
140-16584-4 - DL	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
MB 320-322675/1-C	Method Blank	Total/NA	Air	None	
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 323028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Split	322674
MB 320-322674/1-C	Method Blank	Total/NA	Air	Split	322674
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	Split	322674

#### Cleanup Batch: 323620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2 - DL	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Split	322675
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Split	322675
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	322675
140-16584-4 - DL	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	322675
MB 320-322675/1-C	Method Blank	Total/NA	Air	Split	322675
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	Split	322675

#### **Analysis Batch: 323650**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method P	rep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	537 (modified)	322277
MB 320-322271/1-B	Method Blank	Total/NA	Air	537 (modified)	322277
LCS 320-322271/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	322277

### Cleanup Batch: 323681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Preparation	323028
MB 320-322674/1-C	Method Blank	Total/NA	Air	Preparation	323028
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	Preparation	323028

Job ID: 140-16584-1

## **QC Association Summary**

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

-	N/I	•
	IWI	-

Cleanup	<b>Batch:</b>	324371
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Preparation	323620
140-16584-2 - DL	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Preparation	323620
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Preparation	323620
140-16584-4 - DL	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Preparation	323620
MB 320-322675/1-C	Method Blank	Total/NA	Air	Preparation	323620
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	Preparation	323620

#### **Analysis Batch: 327176**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-322674/1-C	Method Blank	Total/NA	Air	537 (modified)	323681
LCS 320-322674/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	323681

#### **Analysis Batch: 327179**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-322675/1-C	Method Blank	Total/NA	Air	537 (modified)	324371
LCS 320-322675/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	324371

#### **Analysis Batch: 331431**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	537 (modified)	332311
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	537 (modified)	332311

#### **Analysis Batch: 331436**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	537 (modified)	323681

#### Cleanup Batch: 332311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method P	rep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Dilution	324371
140-16584-2 - DL	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Dilution	324371
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Dilution	324371
140-16584-4 - DL	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Dilution	324371

#### **Analysis Batch: 332349**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2 - DL	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	537 (modified)	332311
140-16584-4 - DL	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	537 (modified)	332311

#### **Analysis Batch: 464589**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-464589/13	Lab Control Sample	Total/NA	Air	8321A	

#### **Prep Batch: 470280**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	None	
MB 280-470280/1-B	Method Blank	Total/NA	Air	None	
LCS 280-470280/2-B	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 470293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	Split	470280

## **QC Association Summary**

Client: Chemours Company FC, LLC The Project/Site: Building J-26 Outlet - M0010

## LCMS (Continued)

Cleanup Batch: 470293 (Continue	ea,	)
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-470280/1-B	Method Blank	Total/NA	Air	Split	470280
LCS 280-470280/2-B	Lab Control Sample	Total/NA	Air	Split	470280

#### **Prep Batch: 470435**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	None	
MB 280-470435/1-B	Method Blank	Total/NA	Air	None	
LCS 280-470435/2-B	Lab Control Sample	Total/NA	Air	None	

#### **Prep Batch: 470438**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	None	
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	None	
MB 280-470438/1-B	Method Blank	Total/NA	Air	None	
LCS 280-470438/2-B	Lab Control Sample	Total/NA	Air	None	

#### Cleanup Batch: 470574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	Split	470435
MB 280-470435/1-B	Method Blank	Total/NA	Air	Split	470435
LCS 280-470435/2-B	Lab Control Sample	Total/NA	Air	Split	470435

#### Cleanup Batch: 470703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Pre	ep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	Split	470438
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	Split	470438
MB 280-470438/1-B	Method Blank	Total/NA	Air	Split	470438
LCS 280-470438/2-B	Lab Control Sample	Total/NA	Air	Split	470438

#### **Analysis Batch: 470813**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-3	E-2931 BLDG J-26 OUTLET R1 M0010 IMPINGE	Total/NA	Air	8321A	470293
MB 280-470280/1-B	Method Blank	Total/NA	Air	8321A	470293
LCS 280-470280/2-B	Lab Control Sample	Total/NA	Air	8321A	470293

#### Analysis Batch: 471374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-1	E-2927,2928 BLDG J-26 OUTLET R1 M0010 FH	Total/NA	Air	8321A	470574
MB 280-470435/1-B	Method Blank	Total/NA	Air	8321A	470574
LCS 280-470435/2-B	Lab Control Sample	Total/NA	Air	8321A	470574

#### **Analysis Batch: 471375**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-470438/1-B	Method Blank	Total/NA	Air	8321A	470703
LCS 280-470438/2-B	Lab Control Sample	Total/NA	Air	8321A	470703

#### **Analysis Batch: 471378**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-16584-2	E-2929,2930,2932 BLDG J-26 OUTLET R1 M001	Total/NA	Air	8321A	470703
140-16584-4	E-2933 BLDG J-26 OUTLET R1 M0010 BREAKT	Total/NA	Air	8321A	470703

Eurofins TestAmerica, Knoxville

Job ID: 140-16584-1

Client: Chemours Company FC, LLC The
Project/Site: Building J-26 Outlet - M0010

Job ID: 140-16584-1

Client Sample ID: E-2927,2928 BLDG J-26 OUTLET R1 M0010 Lab Sample ID: 140-16584-1

FΗ

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	rinated Alky Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	151	В	0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluoropentanoic acid (PFPeA)	3.96		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorohexanoic acid (PFHxA)	1.14	1	0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluoroheptanoic acid (PFHpA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorooctanoic acid (PFOA)	0.603		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorononanoic acid (PFNA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorodecanoic acid (PFDA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluoroundecanoic acid (PFUnA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorododecanoic acid (PFDoA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorotridecanoic acid (PFTriA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorotetradecanoic acid (PFTeA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorobutanesulfonic acid (PFBS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorohexanesulfonic acid (PFHxS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
Perfluoroheptanesulfonic Acid PFHpS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
Perfluorodecanesulfonic acid (PFDS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorooctanesulfonic acid (PFOS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluorooctanesulfonamide (FOSA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
Perfluoropentanesulfonic acid PFPeS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
Perfluorononanesulfonic acid (PFNS)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	
N-methylperfluorooctanesulfonamidoa eetic acid (NMeFOSAA)	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		0.523		ng/Sample		09/12/19 12:45	10/16/19 16:35	
4:2 FTS	ND		0.523		ng/Sample		09/12/19 12:45	10/16/19 16:35	•
S:2 FTS	7.29		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
3:2 FTS	ND		0.523	0.512	ng/Sample		09/12/19 12:45	10/16/19 16:35	•
sotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	36		25 - 150				09/12/19 12:45	10/16/19 16:35	
13C4 PFBA	16	*	25 - 150				09/12/19 12:45	10/16/19 16:35	
13C5 PFPeA	45		25 - 150				09/12/19 12:45	10/16/19 16:35	
13C2 PFHxA	50		25 - 150				09/12/19 12:45	10/16/19 16:35	
13C4 PFHpA	50		25 - 150				09/12/19 12:45	10/16/19 16:35	
13C4 PFOA	47		25 - 150				09/12/19 12:45	10/16/19 16:35	
13C5 PFNA	48		25 - 150				09/12/19 12:45	10/16/19 16:35	
3C2 PFDA	46		25 - 150				09/12/19 12:45	10/16/19 16:35	
3C2 PFUnA	43		25 - 150				09/12/19 12:45	10/16/19 16:35	
3C2 PFDoA	38		25 - 150				09/12/19 12:45	10/16/19 16:35	
3C2 PFTeDA	38		25 - 150				09/12/19 12:45	10/16/19 16:35	
8O2 PFHxS	54		25 - 150				09/12/19 12:45	10/16/19 16:35	
3C4 PFOS	47		25 - 150				09/12/19 12:45	10/16/19 16:35	
13-NMeFOSAA	33		25 - 150				09/12/19 12:45	10/16/19 16:35	
15-NEtFOSAA	35		25 - 150				09/12/19 12:45	10/16/19 16:35	
M2-4:2 FTS	44		25 - 150					10/16/19 16:35	
M2-6:2 FTS	41		25 - 150					10/16/19 16:35	
M2-8:2 FTS	40		25 - 150					10/16/19 16:35	

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

Client Sample ID: E-2927,2928 BLDG J-26 OUTLET R1 M0010

FΗ

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Method: 8321A - PFOA and PFOS

 Analyte
 Result
 Qualifier
 RL
 MDL
 Unit
 D
 Prepared
 Analyzed
 Dil Fac

 HFPO-DA
 0.816
 0.816
 0.0244
 0.00264
 ug/Sample
 09/12/19 12:45
 09/20/19 09:58
 1

Lab Sample ID: 140-16584-2

09/12/19 12:45 09/20/19 09:58

Analyzed

Dil Fac

Prepared

Lab Sample ID: 140-16584-1

Client Sample ID: E-2929,2930,2932 BLDG J-26 OUTLET R1

M0010 BH

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorohexanoic acid (PFHxA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluoroheptanoic acid (PFHpA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorooctanoic acid (PFOA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorononanoic acid (PFNA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorodecanoic acid (PFDA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluoroundecanoic acid (PFUnA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorododecanoic acid (PFDoA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorotridecanoic acid (PFTriA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorodecanesulfonic acid (PFDS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorooctanesulfonamide (FOSA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluoropentanesulfonic acid (PFPeS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Perfluorononanesulfonic acid (PFNS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
4:2 FTS	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
6:2 FTS	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
8:2 FTS	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	117		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C5 PFPeA	28		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C2 PFHxA	93		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C4 PFHpA	106		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C4 PFOA	100		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C5 PFNA	113		25 - 150				09/12/19 12:45	10/16/19 15:37	1
13C2 PFDA	123		25 - 150				09/12/19 12:45	10/16/19 15:37	1

Client: Chemours Company FC, LLC The Job ID: 140-16584-1

Project/Site: Building J-26 Outlet - M0010

Client Sample ID: E-2929,2930,2932 BLDG J-26 OUTLET R1

M0010 BH

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Method: 537 (modified) - Flu	uorinated Alkyl Substan	ces (Continued)			
Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	120	25 - 150	09/12/19 12:45	10/16/19 15:37	1
13C2 PFDoA	126	25 - 150	09/12/19 12:45	10/16/19 15:37	1
13C2 PFTeDA	132	25 - 150	09/12/19 12:45	10/16/19 15:37	1
1802 PFHxS	105	25 - 150	09/12/19 12:45	10/16/19 15:37	1
13C4 PFOS	113	25 - 150	09/12/19 12:45	10/16/19 15:37	1
d3-NMeFOSAA	129	25 - 150	09/12/19 12:45	10/16/19 15:37	1
d5-NEtFOSAA	139	25 - 150	09/12/19 12:45	10/16/19 15:37	1
M2-4:2 FTS	95	25 - 150	09/12/19 12:45	10/16/19 15:37	1
M2-6:2 FTS	118	25 - 150	09/12/19 12:45	10/16/19 15:37	1
M2-8:2 FTS	128	25 - 150	09/12/19 12:45	10/16/19 15:37	1

Method: 537 (modified) - Fluor	rinated Alky	/I Substan	ces - DL						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2240000	B *	10000	9800	ng/Sample		09/12/19 12:45	10/20/19 15:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150				09/12/19 12:45	10/20/19 15:53	1

Method: 8321A - PFOA and PF Analyte HFPO-DA	Result 29.2	ualifier	RL 0.200	MDL 0.0400	Unit ug/Sample	_ <u>D</u>	Prepared 09/12/19 12:45	Analyzed 09/20/19 12:05	Dil Fac
Surrogate 13C3 HFPO-DA	$\frac{\% Recovery}{0.3} \frac{Q}{X}$	-	Limits 50 - 200				<b>Prepared</b> 09/12/19 12:45	Analyzed 09/20/19 12:05	Dil Fac

Client Sample ID: E-2931 BLDG J-26 OUTLET R1 M0010 Lab Sample ID: 140-16584-3

**IMPINGER 1,2&3 CONDENSATE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1450	В	50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluoropentanoic acid (PFPeA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorohexanoic acid (PFHxA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluoroheptanoic acid (PFHpA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorooctanoic acid (PFOA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorononanoic acid (PFNA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorodecanoic acid (PFDA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluoroundecanoic acid (PFUnA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorododecanoic acid (PFDoA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorotridecanoic acid (PFTriA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorotetradecanoic acid (PFTeA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorobutanesulfonic acid (PFBS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorohexanesulfonic acid (PFHxS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluoroheptanesulfonic Acid (PFHpS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorodecanesulfonic acid (PFDS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100

Eurofins TestAmerica, Knoxville

Lab Sample ID: 140-16584-2

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

Client Sample ID: E-2931 BLDG J-26 OUTLET R1 M0010

**IMPINGER 1,2&3 CONDENSATE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorooctanesulfonic acid (PFOS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorooctanesulfonamide (FOSA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluoropentanesulfonic acid (PFPeS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Perfluorononanesulfonic acid (PFNS)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
4:2 FTS	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
6:2 FTS	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
8:2 FTS	ND		50.6	49.6	ng/Sample		09/11/19 09:00	09/15/19 16:59	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	114		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C4 PFBA	71		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C5 PFPeA	67		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C2 PFHxA	106		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C4 PFHpA	130		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C4 PFOA	111		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C5 PFNA	123		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C2 PFDA	134		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C2 PFUnA	113		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C2 PFDoA	109		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C2 PFTeDA	102		25 - 150				09/11/19 09:00	09/15/19 16:59	100
1802 PFHxS	139		25 - 150				09/11/19 09:00	09/15/19 16:59	100
13C4 PFOS	129		25 - 150				09/11/19 09:00	09/15/19 16:59	100
d3-NMeFOSAA	112		25 - 150				09/11/19 09:00	09/15/19 16:59	100
d5-NEtFOSAA	129		25 - 150				09/11/19 09:00	09/15/19 16:59	100
M2-4:2 FTS	82		25 - 150				09/11/19 09:00	09/15/19 16:59	100
M2-6:2 FTS	131		25 - 150				09/11/19 09:00	09/15/19 16:59	100
M2-8:2 FTS	115		25 - 150				09/11/19 09:00	09/15/19 16:59	100
Method: 8321A - HFPO-DA									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

 HFPO-DA
 4.07
 0.253
 0.0129 ug/Sample
 09/11/19 09:00
 09/16/19 12:14

 Surrogate
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Factoria

 13C3 HFPO-DA
 23 X
 50 - 200
 09/11/19 09:00
 09/16/19 12:14
 09/11/19 09:00
 09/16/19 12:14

Client Sample ID: E-2933 BLDG J-26 OUTLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1

Lab Sample ID: 140-16584-4

Lab Sample ID: 140-16584-3

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

Client Sample ID: E-2933 BLDG J-26 OUTLET R1 M0010 Lab Sample ID: 140-16584-4

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Method: 537 (modified) - Fluor Analyte	•	Qualifier	` RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	
Perfluoroheptanoic acid (PFHpA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorooctanoic acid (PFOA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorononanoic acid (PFNA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorodecanoic acid (PFDA)	ND	*	500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluoroundecanoic acid (PFUnA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorododecanoic acid (PFDoA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorotridecanoic acid (PFTriA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorooctanesulfonamide (FOSA)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
Perfluorononanesulfonic acid (PFNS)	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		500		ng/Sample			10/16/19 15:47	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		500		ng/Sample			10/16/19 15:47	1
4:2 FTS	ND		500	490	ng/Sample			10/16/19 15:47	1
6:2 FTS	1460		500	490	ng/Sample			10/16/19 15:47	•
8:2 FTS	ND		500	490	ng/Sample		09/12/19 12:45	10/16/19 15:47	1
lsotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	121		25 - 150				09/12/19 12:45	10/16/19 15:47	
13C5 PFPeA	22	*	25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C2 PFHxA	92		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C4 PFHpA	106		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C4 PFOA	94		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C5 PFNA	117		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C2 PFDA	126		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C2 PFUnA	130		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C2 PFDoA	127		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C2 PFTeDA	132		25 - 150				09/12/19 12:45	10/16/19 15:47	
18O2 PFHxS	109		25 - 150				09/12/19 12:45	10/16/19 15:47	1
13C4 PFOS	119		25 - 150				09/12/19 12:45	10/16/19 15:47	1
d3-NMeFOSAA	133		25 - 150				09/12/19 12:45	10/16/19 15:47	
d5-NEtFOSAA	139		25 - 150				09/12/19 12:45	10/16/19 15:47	1
M2-4:2 FTS	97		25 - 150				09/12/19 12:45	10/16/19 15:47	1
M2-6:2 FTS	118		25 - 150				09/12/19 12:45	10/16/19 15:47	1
M2-8:2 FTS	125		25 - 150				09/12/19 12:45	10/16/19 15:47	1
			ъ.						
Method: 537 (modified) - Fluor Analyte		VI Substan Qualifier	Ces - DL RL	MDL	1114	D	Prepared	Analyzed	Dil Fac

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

Client Sample ID: E-2933 BLDG J-26 OUTLET R1 M0010

**BREAKTHROUGH XAD-2 RESIN TUBE** 

Date Collected: 09/06/19 00:00 Matrix: Air

Date Received: 09/09/19 18:35 Sample Container: Air Train

Isotope Dilution  13C4 PFBA	<b>%Recovery</b> 81	Qualifier	<b>Limits</b> 25 - 150			<b>Prepared</b> 09/12/19 12:45	Analyzed 10/20/19 16:02	Dil Fac
Method: 8321A - PFO		Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	16.3		0.200	0.0400 ug/Sample		09/12/19 12:45	09/20/19 12:08	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	0.3	X	50 - 200			09/12/19 12:45	09/20/19 12:08	

Lab Sample ID: 140-16584-4

## **Default Detection Limits**

Client: Chemours Company FC, LLC The Job ID: 140-16584-1 Project/Site: Building J-26 Outlet - M0010

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Prep: None** 

Analyte	RL	MDL	Units	
4:2 FTS	0.500	0.490	ng/Sample	
6:2 FTS	0.500	0.490	ng/Sample	
8:2 FTS	0.500	0.490	ng/Sample	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample	
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample	
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample	
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample	
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample	
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample	
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample	
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample	
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample	
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample	
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample	
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample	
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample	
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample	
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample	
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample	
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample	
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample	
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample	

#### Method: 8321A - HFPO-DA

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00250	0.00128	ug/Sample

### Method: 8321A - PFOA and PFOS

Prep: None

ſ	Analyte	RL	MDL	Units
	HFPO-DA	0.0250	0.00270	ug/Sample
	HFPO-DA	0.100	0.0200	ug/Sample

# APPENDIX C SAMPLE CALCULATIONS

## SAMPLE CALCULATIONS FOR HFPO DIMER ACID (METHOD 0010)

Client: Chemours
Test Number: Run 1

Test Location: Carbon Drum Outlet

Plant: Chambers Works
Test Date: 09/06/19
Test Period: 0953-1353

#### 1. HFPO Dimer Acid concentration, lbs/dscf.

Conc1 = 
$$\frac{W \times 2.2046 \times 10^{-9}}{Vm(std)}$$

`

Conc1 = 60.4 x 2.2046 x 10-9

127.057

Conc1 = 1.05E-09

Where:

W = Weight of HFPO Dimer Acid collected in sample in ug.

Conc1 = HFPO Dimer Acid concentration, lbs/dscf.

 $2.2046 \times 10^{-9}$  = Conversion factor from ug to lbs.

#### 2. HFPO Dimer Acid concentration, ug/dscm.

 $Conc2 = W/(Vm(std) \times 0.02832)$ 

Conc2 =  $60.4 / (127.057 \times 0.02832)$ 

Conc2 = 16.8

Where:

Conc2 = HFPO Dimer Acid concentration, ug/dscm.

0.02832 = Conversion factor from cubic feet to cubic meters.

#### 3. HFPO Dimer Acid mass emission rate, lbs/hr.

 $MR1_{(Inlet)}$  = Conc1 x Qs(std) x 60 min/hr

 $MR1_{(Inlet)} = 1.05E-09 \times 17 \times 60$ 

 $MR1_{(Inlet)} = 1.05E-06$ 

Where:

MR1<sub>(Inlet)</sub> = HFPO Dimer Acid mass emission rate, lbs/hr.

#### 4. HFPO Dimer Acid mass emission rate, g/sec.

 $MR2_{(Inlet)} = MR1_{(Inlet)} \times 453.59 / 3600$ 

 $MR2_{(Inlet)} = 1.05E-06 \times 453.59 / 3600$ 

 $MR2_{(Inlet)} = 1.32E-07$ 

Where:

MR2<sub>(Inlet)</sub> = HFPO Dimer Acid mass emission rate, g/sec.

453.59 = Conversion factor from pounds to grams.

3600 = Conversion factor from hours to seconds.

#### 5. HFPO Dimer Acid Removal Efficiency, %

 $RE = MR1_{(Inlet)} - MR1_{(Outlet)}$ 

 $MR1_{(Inlet)}$ 

RE = (4.26E-03) - (1.05E-06)

4.26E-03

RE = 99.9

Where:

RE = Carbon Drum Removal Efficiency.

MR1<sub>(Inlet)</sub> = Carbon Drum Inlet HFPO Dimer Acid mass rate, lbs/hr.

 $MR1_{(Outlet)} = Carbon Drum Outlet HFPO Dimer Acid mass rate, lbs/hr.$ 

# APPENDIX D EQUIPMENT CALIBRATION RECORDS

#### INTERFERENCE CHECK

Date: 12/4/14-12/5/14 Analyzer Type: Servomex - O2 Model No: 1440 Serial No: 01420L/898 Calibration Span: 21.09 %
Pollutant: 21.09% O2 - CC418692

INTERFERENT GAS	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	% OF CALIBRATION SPAN <sup>(a)</sup>
CO <sub>2</sub> (30.17% CC199689)	0.00	0.09	0.4
NO (445 ppm CC346681)	0.10	0.02	0.5
NO <sub>2</sub> (23.78 ppm CC500749)	NA	NA	NA
N <sub>2</sub> O (90.4 ppm CC352661)	52661) 0.00 0.05		0.2
CO (461.5 ppm XC006064B)	0.00	0.02	0.0
SO <sub>2</sub> (451.2 ppm CC409079)	0.00	0.05	0.2
CH <sub>4</sub> (453.1 ppm SG901795)	NA	NA	NA
H <sub>2</sub> (552 ppm ALM048043)	0.10	0.09	0.5
HCl (45.1 ppm CC17830)	0.00	0.00 0.03	
NH <sub>3</sub> (9.69 ppm CC58181)	0.00	0.09	0.4
	2.4		
	METHOD SPECIFICATION		< 2.5%

<sup>(</sup>a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

#### INTERFERENCE CHECK

Date: 12/4/14-12/5/14 Analyzer Type: Servomex - CO2 Model No: 1440 Serial No: 01415L/711 <u>Calibration Span: 16.65%</u> <u>Pollutant: 16.65% CO2 - CC418692</u>

INTERFERENT GAS	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	% OF CALIBRATION SPAN <sup>(a)</sup>
CO <sub>2</sub> (30.17% CC199689)	NA ·	NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.1
NO <sub>2</sub> (23.78 ppm CC500749)	0.00	0.10	0.6
N <sub>2</sub> O (90.4 ppm CC352661)	0.00 0.01		0.0
CO (461.5 ppm XC006064B)	0.00	0.01	0.0
SO <sub>2</sub> (451.2 ppm CC409079)	0.00	0.01	0.0
CH <sub>4</sub> (453.1 ppm SG901795)	0.00	0.03	0.2
H <sub>2</sub> (552 ppm ALM048043)	0.00	0.04	0.2
HCl (45.1 ppm CC17830)	CI (45.1 ppm CC17830) 0.10 0.04		0.6
NH <sub>3</sub> (9.69 ppm CC58181)	0.00	0.02	0.1
	1.9		
	METHOD SPECIFICATION		< 2.5%

<sup>(</sup>a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker



## **CERTIFICATE OF ANALYSIS**

### **Grade of Product: EPA Protocol**

Part Number: E03NI79E15A00E4 Reference Number: 82-401288926-1

Cylinder Number: CC18055 Cylinder Volume: 150.5 CF Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG

PGVP Number: B52018 Valve Outlet: 590

Gas Code: CO2,O2,BALN Certification Date: Sep 04, 2018

Expiration Date: Sep 04, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

	ANALYTICAL RESULTS									
Compon	ent	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates				
CARBON	DIOXIDE	9.000 %	8.864 %	G1	+/- 0.7% NIST Traceab	e 09/04/2018				
OXYGEN		12.00 %	12.00 %	G1	+/- 0.4% NIST Traceable	e 09/04/2018				
NITROGE	N	Balance			-					
	CALIBRATION STANDARDS									
Type	Lot ID	Cylinder No	Concentration		Uncertainty	<b>Expiration Date</b>				
NTRM	13060629	CC413730	13.359 % CARBON [	DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019				
			ANALYTICAL	<b>EQUIPMENT</b>						
Instrument/Make/Model			Analytical Principle Last Mult		Last Multipoint Cali	/lultipoint Calibration				
Horiba VIA	510-CO2-19G	YCXEG	NDIR		Aug 09, 2018					
Horiba MP	A 510-O2-7TW	MJ041	Paramagnetic		Aug 09, 2018					

**Triad Data Available Upon Request** 





## **CERTIFICATE OF ANALYSIS**

### **Grade of Product: EPA Protocol**

Part Number: E03NI62E15A0224 Reference Number: 82-124503752-1

Cylinder Number: CC18531 Cylinder Volume: 157.2 CF Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG

PGVP Number: B52015 Valve Outlet: 590

Gas Code: CO2,O2,BALN Certification Date: Jul 22, 2015

Expiration Date: Jul 22, 2023

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS								
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates			
CARBON DIOXIDE	17.00 %	16.75 %	G1	+/- 0.7% NIST Traceable	07/22/2015			
OXYGEN	21.00 %	21.19 %	G1	+/- 0.5% NIST Traceable	07/22/2015			
NITROGEN	Balance			-				

CALIBRATION STANDARDS								
Type	Lot ID	Cylinder No	Concentration	Uncertainty	<b>Expiration Date</b>			
NTRM	13060739	CC414621	16.939 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 08, 2019			
NTRM	09061440	CC282668	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019			

ANALYTICAL EQUIPMENT

Instrument/Make/Model Analytical Principle Last Multipoint Calibration

**Triad Data Available Upon Request** 



#### Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

Calibrator MDW Meter Box Number 30 Ambient Temp 72
Thermocouple Simulator

Date 21-Feb-19 Wet Test Meter Number P-2952 Temp Reference Source (Accuracy +/- 1°F)

Dry Gas Meter Number 17485131

Setting	Gas	Volume		Temperatures				Baro Press, in Hg ( Pb)	29.87
Orifice Manometer	Wet Test Meter	Dry gas Meter	Wet Test Meter		Dry Gas Meter	,		Calibration	Results
in H₂0 (∆H)	ft <sup>3</sup> (Vw)	ft <sup>3</sup> (Vd)	°F (Tw)	Outlet, °F (Td <sub>o</sub> )	Inlet, °F (Td <sub>i</sub> )	Average, °F (Td)	Time, min (O)	Y	ΔН
0.5	5.0	905.750 910.724 4.974	70.0	70.00 70.00 70.00	70.00 70.00 70.00	68.0	12.8	1.0002	1.8501
1.0	5.0	911.701 916.685 4.984	70.0	71.00 71.00 71.00	71.00 71.00 71.00	70.0	9.0	1.0007	1.8224
1.5	10.0	917.680 927.695 10.015	70.0	72.00 74.00 73.00	72.00 74.00 73.00	72.5	15.0	0.9995	1.8894
2.0	10.0	928.690 938.780 10.090	70.0	74.00 75.00 74.50	74.00 75.00 74.50	74.5	13.0	0.9946	1.8851
3.0	10.0	939.800 949.930 10.130	70.0	76.00 77.00 76.50	76.00 77.00 76.50	76.0	10.7	0.9910	1.9103
							Average	0.9972	1.8715

Vw - Gas Volume passing through the wet test meter

Vd - Gas Volume passing through the dry gas meter

Tw - Temp of gas in the wet test meter

Tdi - Temp of the inlet gas of the dry gas meter

Tdo - Temp of the outlet gas of the dry gas meter

Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run

Pb - Barometric Pressure

ΔH - Pressure differential across

orifice

Y - Ratio of accuracy of wet test

meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6}\right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)}\right] * \left[\frac{(tw + 460) * O}{Vw}\right]^{2}$$

Reference Temperature Select Temperature		Temperature F	Average Temperature	Temp Difference <sup>2</sup>				
O°C ●°F			Channe	l Number			Reading	(%)
O °C ● °F	1	2	3	4	5	6		
32	32	32	32	32	32		32.0	0.0%
212	212	213	213	212	212		212.4	-0.1%
932	932	933	933	932	932		932.4	0.0%
1832	1832	1832	1832	1832	1832		1832.0	0.0%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

Temp Diff = 
$$\frac{\left( \text{Reference Temp(°F)} + 460 \right) - \left( \text{Test Temp(°F)} + 460 \right)}{\text{Reference Temp(°F)} + 460}$$

#### **Y Factor Calibration Check Calculation**

## MODIFIED METHOD 0010 TEST TRAIN CARBON DRUM INLET

## METER BOX NO. 30

09/06/19

	IXUII I
MWd = Dry molecular weight source gas, lb/lb-mole.	
0.32 = Molecular weight of oxygen, divided by 100.	
0.44 = Molecular weight of carbon dioxide, divided by 100.	
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO <sub>2</sub> = Percent carbon dioxide by volume, dry basis.	0.2
% O <sub>2</sub> = Percent oxygen by volume, dry basis.	1.0

$$MWd = (0.32 * O2) + (0.44 * CO2) + (0.28 * (100 - (CO2 + O2)))$$

$$MWd = (0.32 * 1) + (0.44 * 0.2) + (0.28 * (100 - (0.2 + 1)))$$

$$MWd = (0.32) + (0.09) + (27.66)$$

 $\mathbf{MWd} = 28.07$ 

Tma = Source Temperature, absolute(°R)		
Tm = Average dry gas meter temperature, deg F.	75.3	

$$Tma = Ts + 460$$

$$Tma = 75.25 + 460$$

Tma = 535.25

Ps = Absolute meter pressure, inches Hg.	
13.60 = Specific gravity of mercury.	
delta H = Avg pressure drop across the orifice meter during sampling, in H2O	1.00
Pb = Barometric Pressure, in Hg.	29.87

$$Pm = Pb + (delta H / 13.6)$$

$$Pm = 29.87 + (1/13.6)$$

Pm = 29.94

Yqa = dry gas meter calibration check value, dimensionless.	
0.03 = (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.	
29.00 = dry molecular weight of air, lb/lb-mole.	
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	131.605
Y = Dry gas meter calibration factor (based on full calibration)	0.9972
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H2O.	1.8715
avg SQRT Delta $H = Avg$ SQRT press. drop across the orifice meter during sampling , in. $H_2O$	1.0000
O = Total sampling time, minutes.	240

$$Yqa = (O \, / \, Vm \,) * SQRT \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \quad * avg \; SQRT \; Delta \, H$$

$$Yqa = (240.00 / 131.61) * SQRT (0.0319 * 535.25 * 29) / (1.87 * 29.94 * 28.07) * 1.00$$

$$Yqa = 1.824 * SQRT 495.160 / 1,572.950 * 1.00$$

Yqa = 1.023

Diff = Absolute difference between Yqa and Y	2.59

$$Diff = ((Y - Yqa) / Y) * 100$$

Average Diff = 2.59

Allowable = 5.0

### Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

Calibrator MDW Meter Box Number 29 Ambient Temp 72
Thermocouple Simulator

Date 2-Aug-19 Wet Test Meter Number P-2952 Temp Reference Source (Accuracy +/- 1°F)

Dry Gas Meter Number 17176777

Setting	Setting Gas Volume		Temperatures				Baro Press, in Hg ( Pb)	29.86	
Orifice Manometer	Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter			Calibration	Results	
in H₂0 (∆H)	ft <sup>3</sup> (Vw)	ft <sup>3</sup> (Vd)	°F (Tw)	Outlet, °F (Td <sub>o</sub> )	Inlet, °F (Td <sub>i</sub> )	Average, °F (Td)	Time, min (O)	Y	ΔН
0.5	5.0	921.455 926.400 4.945	72.0	74.00 75.00 71.50	74.00 75.00 71.50	71.5	12.8	1.0089	1.8524
1.0	5.0	927.380 932.330 4.950	72.0	75.00 75.00 72.50	75.00 75.00 72.50	72.5	9.10	1.0086	1.8690
1.5	10.0	933.275 943.200 9.925	72.0	73.00 75.00 74.00	73.00 75.00 74.00	74.0	15.0	1.0076	1.8990
2.0	10.0	944.050 954.042 9.992	72.0	75.00 76.00 75.50	75.00 76.00 75.50	75.5	13.2	1.0024	1.9553
3.0	10.0	954.900 964.822 9.922	72.0	76.00 77.00 76.50	76.00 77.00 76.50	76.5	10.6	1.0089	1.8878
				O. Time of calling			Average	1.0073	1.8927

Vw - Gas Volume passing through the wet test meter

Vd - Gas Volume passing through the dry gas meter

Tw - Temp of gas in the wet test meter

Tdi - Temp of the inlet gas of the dry gas meter

Tdo - Temp of the outlet gas of the dry gas meter

Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run

Pb - Barometric Pressure

ΔH - Pressure differential across

orifice

Y - Ratio of accuracy of wet test

meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6}\right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)}\right] * \left[\frac{(tw + 460) * O}{Vw}\right]^{2}$$

Reference Temperature Select Temperature		Temperature Reading from Individual Thermocouple Input <sup>1</sup>						Temp Difference <sup>2</sup>
○°C • °F	Channel Number						Reading	(%)
O°C ●°F	1	2	3	4	5	6		, ,
32	31	31	31	31	31		31.0	0.2%
212	212	212	212	211	212		211.8	0.0%
932	932	933	932	932	932		932.2	0.0%
1832	1830	1830	1830	1830	1830		1830.0	0.1%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

Temp Diff = 
$$\frac{\left( \text{Reference Temp(°F)} + 460 \right) - \left( \text{Test Temp(°F)} + 460 \right)}{\text{Reference Temp(°F)} + 460}$$

#### **Y Factor Calibration Check Calculation**

## MODIFIED METHOD 0010 TEST TRAIN

#### CARBON DRUM OUTLET

METER BOX NO. 29 09/06/19

	Run 1
MWd = Dry molecular weight source gas, lb/lb-mole.	
0.32 = Molecular weight of oxygen, divided by 100.	
0.44 = Molecular weight of carbon dioxide, divided by 100.	
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO <sub>2</sub> = Percent carbon dioxide by volume, dry basis.	0.2
$\% O_2$ = Percent oxygen by volume, dry basis.	0.8

$$MWd = (0.32 * O2) + (0.44 * CO2) + (0.28 * (100 - (CO2 + O2)))$$

$$MWd = (0.32 * 1) + (0.44 * 0.2) + (0.28 * (100 - (0.2 + 1)))$$

$$MWd = (0.32) + (0.09) + (27.66)$$

MWd =

Tma = Source Temperature, absolute(°R)	
Tm = Average dry gas meter temperature, deg F.	74.4

Tma = Ts + 460

Tma = 75.25 + 460

Tma = 534.44

28.06

Ps = Absolute meter pressure, inches Hg.	
13.60 = Specific gravity of mercury.	
delta H = Avg pressure drop across the orifice meter during sampling, in H2O	1.00
Pb = Barometric Pressure, in Hg.	29.87

Pm = Pb + (delta H / 13.6)

Pm = 29.87 + (1/13.6)

Pm =

29.94

Yqa = dry gas meter calibration check value, dimensionless.	
0.03 = (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.	
29.00 = dry molecular weight of air, lb/lb-mole.	
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	127.625
Y = Dry gas meter calibration factor (based on full calibration)	1.0073
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H2O.	1.8927
avg SQRT Delta $H = Avg$ SQRT press. drop across the orifice meter during sampling , in. $H_2O$	1.0000
O = Total sampling time, minutes.	240

$$Yqa = (O \, / \, Vm \,) * SQRT \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \\ \phantom{XQQ} * avg \, SQRT \, Delta \, Here \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \\ \phantom{XQQ} * avg \, SQRT \, Delta \, Here \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \\ \phantom{XQQ} * avg \, SQRT \, Delta \, Here \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \\ \phantom{XQQ} * avg \, SQRT \, Delta \, Here \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, Delta \, H@ * Pm * MWd \, ) \\ \phantom{XQQ} * avg \, SQRT \, Delta \, Here \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 29 \, ) \, / \, ( \, 0.0319 * Tma * 20 \, ) \, / \, ( \, 0$$

$$Yqa = (240.00 / 131.61) * SQRT (0.0319 * 535.25 * 29) / (1.87 * 29.94 * 28.07) * 1.00$$

Yqa = 1.824 \* SQRT 495.160 / 1,572.950 \* 1.00

Yqa = 1.049

Diff = Absolute difference between Yqa and Y	4.14

Diff = (( Y - Yqa ) / Y ) \* 100

Diff = (( 0.9972 - 1.023 ) / 0.9972 ) \* 100

Average Diff = 4.14

Allowable = 5.0

# APPENDIX E LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

Paul Meeter	Senior Project Manager
Jeff O'Neill	Senior Project Manager
Steve Rathfon	Senior Technician
Matt Winkeler	Senior Technician

Appendix D - J26 Trench Water Data Analytical Reports (Eurofins – LL)









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#### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: September 11, 2019 14:38

Project: CWK - J-26 TRENCH

Account #: 44293 Group Number: 2058748 SDG: CWK97 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Attn: Mike Aucoin Electronic Copy To AECOM Attn: Kathy West Electronic Copy To AECOM Attn: Scott Norcross

Respectfully Submitted,

Kerri Sachtleben

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









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#### **SAMPLE INFORMATION**

**Client Sample Description** 

J-26 TRENCH-080819 Grab Water

Sample Collection
Date/Time

ELLE#

08/08/2019 09:40

1124773

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



### Case Narrative

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Project Name: CWK - J-26 TRENCH

ELLE Group #: 2058748

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1124773

Reporting limits were raised due to interference from the sample matrix.

A dilution was performed for the following target analyte(s): HFPODA. Quantitation of this analyte(s) was done using an internal standard approach.

The recoveries for the labeled compounds used as extraction standards were outside the QC acceptance limits in the method blank and laboratory control sample(s) as noted on the QC Summary.

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

#### Batch #: 19234050 (Sample number(s): 1124773)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: HFPODA

The relative percent difference(s) for the following analyte(s) in the LCS/LCSD were outside acceptance windows: Perfluorohexanesulfonic acid, Perfluoroctanesulfonic acid, NMePFOSA, NEtPFOSA, HFPODA

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1124773

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1124773, Blank, LCS, LCSD

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Sample Description: J-26 TRENCH-080819 Grab Water

J-26 TRENCH

Project Name: CWK - J-26 TRENCH

Submittal Date/Time: 08/13/2019 18:11
Collection Date/Time: 08/08/2019 09:40
SDG#: CWK97-01

Chemours c/o AECOM

ELLE Sample #: WW 1124773 ELLE Group #: 2058748

Matrix: Water

CAT No.	Analysis Name		CAS Number	Resu	lt	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS	/MS Miscellaneous	SOP EPA537 T-PFAS-WI21		ng/l		ng/l	ng/l	
14903	9CI-PF3ONS1		756426-58-1	120	U	120	500	100
	9CI-PF3ONS is the acron 9-chlorohexadecafluoro-3	,	onic acid					
14903	11CI-PF3OUdS1		763051-92-9	120	U	120	500	100
	11Cl-PF3OUdS is the acr 11-Chloroeicosafluoro-3-c							
14903	DONA <sup>1</sup>		919005-14-4	120	U	120	500	100
	DONA is the acronym for form of ADONA.	4,8-dioxa-3H-perflu	uorononanoic acid,	the free	acid			
14903	10:2Fluorotelomersulfonio	c acid¹	120226-60-0	250	U	250	1,200	100
14903	4:2-Fluorotelomersulfonic	acid¹	757124-72-4	120	U	120	500	100
14903	6:2-Fluorotelomersulfonic	acid¹	27619-97-2	500	U	500	1,200	100
14903	8:2-Fluorotelomersulfonic	acid¹	39108-34-4	250	U	250	740	100
14903	HFPODA <sup>1</sup>		13252-13-6	2,400	),000	12,000	74,000	10000
	HFPODA is the acronym heptafluoropropoxy)-prop		,					
14903	NEtFOSAA <sup>1</sup>		2991-50-6	120	U	120	740	100
	NEtFOSAA is the acronyr	n for N-ethyl perflu		idoaceti				
14903	NEtPFOSA <sup>1</sup>		4151-50-2	250	U	250	1,200	100
	NEtPFOSA is the acronyr	n for N-ethylperfluc	oro-1-octanesulfona	ımide				
14903	NEtPFOSAE <sup>1</sup>		1691-99-2	250	U	250	740	100
	NEtPFOSAE is the acrony 2-(N-ethylperfluoro-1-octa							
14903	NMeFOSAA¹		2355-31-9	150	U	150	500	100
	NMeFOSAA is the acrony	m for N-methyl per	fluorooctanesulfon	amidoa	cetic Acid.			
14903	NMePFOSA <sup>1</sup>		31506-32-8	250	U	250	740	100
	NMePFOSA is the acrony	m for N-methylper	fluoro-1-octanesulfo	onamide	•			
14903	NMePFOSAE <sup>1</sup>		24448-09-7	250	U	250	740	100
	NMePFOSAE is the acror 2-(N-methylperfluoro-1-oc		ethanol					
14903	Perfluorobutanesulfonic a	cid	375-73-5	120	U	120	500	100
14903	Perfluorobutanoic ac	id	375-22-4	53,00	00	500	1,200	100
14903	Perfluorodecanesulfonic a	acid¹	335-77-3	120	U	120	500	100
14903	Perfluorodecanoic acid		335-76-2	120	U	120	500	100
14903	Perfluorododecanesulfoni	c acid¹	79780-39-5	120	U	120	740	100
14903	Perfluorododecanoic acid		307-55-1	120	U	120	500	100
14903	Perfluoroheptanesulfonic	acid¹	375-92-8	120	U	120	500	100
14903	Perfluoroheptanoic acid		375-85-9	120	U	120	500	100
14903	Perfluorohexadecanoic ad	cid¹	67905-19-5	250	U	250	740	100
14903	Perfluorohexanesulfonic a	acid	355-46-4	120	U	120	500	100
14903	Perfluorohexanoic ad	id	307-24-4	180	J	120	500	100
14903	Perfluorononanesulfonic a	acid¹	68259-12-1	120	U	120	500	100
					the evelvetion of the			

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: J-26 TRENCH-080819 Grab Water

J-26 TRENCH

**Project Name: CWK - J-26 TRENCH** 

Submittal Date/Time: 08/13/2019 18:11 Collection Date/Time: 08/08/2019 09:40

SDG#: CWK97-01

Chemours c/o AECC	DM
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**ELLE Sample #:** WW 1124773 **ELLE Group #:** 2058748

Matrix: Water

CAT No.	Analysis Name	CAS Number	Resu	lt	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPA53 T-PFAS-WI		ng/l		ng/l	ng/l	
14903	Perfluorononanoic acid	375-95-1	120	U	120	500	100
14903	Perfluorooctadecanoic acid1	16517-11-6	250	U	250	740	100
14903	Perfluorooctanesulfonamide <sup>1</sup>	754-91-6	120	U	120	500	100
14903	Perfluorooctanesulfonic acid	1763-23-1	120	U	120	500	100
14903	Perfluorooctanoic acid	335-67-1	120	U	120	500	100
14903	Perfluoropentanesulfonate <sup>1</sup>	2706-91-4	120	U	120	500	100
14903	Perfluoropentanoic acid	2706-90-3	220	J	120	500	100
14903	Perfluorotetradecanoic acid	376-06-7	120	U	120	500	100
14903	Perfluorotridecanoic acid	72629-94-8	120	U	120	500	100
14903	Perfluoroundecanoic acid	2058-94-8	120	U	120	500	100
Repo	rting limits were raised due to interference fr	om the sample matr	ix.				

A dilution was performed for the following target analyte(s): HFPODA. Quantitation of this analyte(s) was done using an internal standard approach.

The recoveries for the labeled compounds used as extraction standards were outside the QC acceptance limits in the method blank and laboratory control sample(s) as noted on the QC Summary.

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

#### Sample Comments

State of New Jersey Lab Certification No. PA011

#### **Laboratory Sample Analysis Record** Method CAT **Analysis** Dilution Trial# **Analysis Name** Batch# Analyst **Date and Time** No. Factor 14903 NJ PFAS in Water by LC/MS/MS SOP EPA537 19234050 08/31/2019 02:04 Marissa C Drexinger 100 T-PFAS-WI21398 ver4 14903 NJ PFAS in Water by LC/MS/MS SOP EPA537 1 19234050 09/04/2019 07:43 Marissa C Drexinger 10000 T-PFAS-WI21398 ver4 Isaac Phillips-Cary 14904 NJ PFAS Water Prep SOP EPA537 19234050 08/22/2019 16:30 1 T-PFAS-WI21398 ver4

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

<sup>\*=</sup>This limit was used in the evaluation of the final result

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2058748

Reported: 09/11/2019 14:38

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 19234050	Sample number(	s): 1124773	
9CI-PF3ONS	0.50 U	0.50	2.0
11CI-PF3OUdS	0.50 U	0.50	2.0
DONA	0.50 U	0.50	2.0
10:2Fluorotelomersulfonic acid	1.0 U	1.0	5.0
4:2-Fluorotelomersulfonic acid	0.50 U	0.50	2.0
6:2-Fluorotelomersulfonic acid	2.0 U	2.0	5.0
8:2-Fluorotelomersulfonic acid	1.0 U	1.0	3.0
HFPODA	0.50 U	0.50	3.0
NEtFOSAA	0.50 U	0.50	3.0
NEtPFOSA	1.0 U	1.0	5.0
NEtPFOSAE	1.0 U	1.0	3.0
NMeFOSAA	0.60 U	0.60	2.0
NMePFOSA	1.0 U	1.0	3.0
NMePFOSAE	1.0 U	1.0	3.0
Perfluorobutanesulfonic acid	0.50 U	0.50	2.0
Perfluorobutanoic acid	2.0 U	2.0	5.0
Perfluorodecanesulfonic acid	0.50 U	0.50	2.0
Perfluorodecanoic acid	0.50 U	0.50	2.0
Perfluorododecanesulfonic acid	0.50 U	0.50	3.0
Perfluorododecanoic acid	0.50 U	0.50	2.0
Perfluoroheptanesulfonic acid	0.50 U	0.50	2.0
Perfluoroheptanoic acid	0.50 U	0.50	2.0
Perfluorohexadecanoic acid	1.0 U	1.0	3.0
Perfluorohexanesulfonic acid	0.50 U	0.50	2.0
Perfluorohexanoic acid	0.50 U	0.50	2.0
Perfluorononanesulfonic acid	0.50 U	0.50	2.0
Perfluorononanoic acid	0.50 U	0.50	2.0
Perfluorooctadecanoic acid	1.0 U	1.0	3.0
Perfluorooctanesulfonamide	0.50 U	0.50	2.0
Perfluorooctanesulfonic acid	0.50 U	0.50	2.0
Perfluorooctanoic acid	0.50 U	0.50	2.0
Perfluoropentanesulfonate	0.50 U	0.50	2.0
Perfluoropentanoic acid	0.50 U	0.50	2.0
Perfluorotetradecanoic acid	0.50 U	0.50	2.0
Perfluorotridecanoic acid	0.50 U	0.50	2.0
Perfluoroundecanoic acid	0.50 U	0.50	2.0

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2058748

Reported: 09/11/2019 14:38

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19234050	Sample number(	s): 1124773							
9CI-PF3ONS	1.79	1.47	1.79	1.54	82	86	50-150	4	30
11CI-PF3OUdS	1.81	1.53	1.81	1.60	85	88	50-150	4	30
DONA	1.81	1.46	1.81	1.46	81	81	50-150	0	30
10:2Fluorotelomersulfonic acid	5.55	4.34	5.55	5.45	78	98	50-150	23	30
4:2-Fluorotelomersulfonic acid	5.38	4.40	5.38	5.01	82	93	50-150	13	30
6:2-Fluorotelomersulfonic acid	5.46	4.53	5.46	5.09	83	93	50-150	12	30
8:2-Fluorotelomersulfonic acid	5.52	5.21	5.52	5.30	94	96	50-150	2	30
HFPODA	1.92	1.90	1.92	5.28	99	275*	50-150	94*	30
NEtFOSAA	1.92	1.50	1.92	1.54	78	80	50-150	3	30
NEtPFOSA	1.92	2.17	1.92	1.04	113	54	50-150	70*	30
NEtPFOSAE	1.92	1.73	1.92	1.68	90	88	50-150	3	30
NMeFOSAA	1.92	1.77	1.92	1.67	92	87	50-150	6	30
NMePFOSA	1.92	1.40	1.92	2.58	73	134	50-150	59*	30
NMePFOSAE	1.92	2.07	1.92	1.85	108	97	50-150	11	30
Perfluorobutanesulfonic acid	1.70	1.41	1.70	1.59	83	94	50-150	12	30
Perfluorobutanoic acid	1.92	1.87	1.92	2.11	97	110	50-150	12	30
Perfluorodecanesulfonic acid	1.85	1.63	1.85	1.82	88	98	50-150	11	30
Perfluorodecanoic acid	1.92	1.67	1.92	1.77	87	92	50-150	6	30
Perfluorododecanesulfonic acid	1.86	1.88	1.86	1.76	101	94	50-150	7	30
Perfluorododecanoic acid	1.92	1.82	1.92	1.84	95	96	50-150	1	30
Perfluoroheptanesulfonic acid	1.83	1.63	1.83	1.80	89	98	50-150	10	30
Perfluoroheptanoic acid	1.92	1.68	1.92	1.79	87	93	50-150	7	30
Perfluorohexadecanoic acid	1.92	2.11	1.92	2.16	110	113	50-150	2	30
Perfluorohexanesulfonic acid	1.81	1.46	1.81	2.20	81	121	50-150	40*	30
Perfluorohexanoic acid	1.92	1.76	1.92	1.84	92	96	50-150	4	30
Perfluorononanesulfonic acid	1.84	1.69	1.84	1.80	92	98	50-150	7	30
Perfluorononanoic acid	1.92	1.89	1.92	1.95	98	102	50-150	4	30
Perfluorooctadecanoic acid	1.92	2.16	1.92	2.43	113	127	50-150	12	30
Perfluorooctanesulfonamide	1.92	1.89	1.92	1.63	98	85	50-150	15	30
Perfluorooctanesulfonic acid	1.83	1.46	1.83	2.46	79	134	50-150	51*	30
Perfluorooctanoic acid	1.92	1.63	1.92	1.82	85	95	50-150	11	30
Perfluoropentanesulfonate	1.80	1.47	1.80	1.62	82	90	50-150	10	30
Perfluoropentanoic acid	1.92	1.78	1.92	1.85	93	96	50-150	3	30
Perfluorotetradecanoic acid	1.92	1.71	1.92	1.79	89	93	50-150	5	30
Perfluorotridecanoic acid	1.92	1.92	1.92	1.86	100	97	50-150	3	30
Perfluoroundecanoic acid	1.92	1.56	1.92	1.75	81	91	50-150	12	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2058748

Reported: 09/11/2019 14:38

### **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19234050

1124773     68     156     152*       Blank     93     96     87       LCS     90     91     86       LCSD     111     112     103       Limits:     33-123     31-157     26-148	65 108 112 139	39 89 87 106	62 86 88
LCS     90     91     86       LCSD     111     112     103	112 139	87	88
LCSD 111 112 103	139		
		106	
Limits: 33-123 31-157 26-148	04.400		112
	21-182	35-138	34-126
13C4-PFHpA 13C2-6:2-FTS 13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1124773 68 80 69	64	68	71
Blank 95 130 92	93	103	91
LCS 94 124 95	95	97	89
LCSD 117 154 116	120	114	119
Limits: 35-126 32-170 48-122	50-121	41-144	47-125
13C2-8:2-FTS d3-NMeFOSAA 13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1124773 75 83 73	91	75	87
Blank 110 85 87	83	92	69
LCS 106 91 95	94	89	71
LCSD 151 118 122	115	130	96
Limits: 27-164 30-127 30-128	30-142	39-130	26-119
13C8-PFOSA d7-NMePFOSAE d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1124773 74 76 79	86	84	14*
Blank 27 12 4*	14	6*	84
LCS 30 18 6*	22	7*	108
LCSD 27 13 4*	18	6*	120
Limits: 11-127 10-128 10-104	10-121	10-106	70-130

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

# Environmental Analysis Request/Chain of Custody

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		Compliance:	Yes 🗌	No	×	mer	ı	l ref	ntai	537	72							N = HNO <sub>3</sub>	B = NaOH
			ection		Composite	☐ Sediment	Potable If NPDES	Other: Tunch	Total # of Containers	FAS 5	1 1							$S = H_2SO_4$ $O = Other$	$P = H_3PO_4$
Sample Identific	cation	Date	Time	Grab	Com	Soil	Water	Othe	Total	7									narks
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7045 0216



# Sample Administration Receipt Documentation Log

Doc Log ID: 256901

Group Number(s): 2058748

Client: Chemours Chambers Works

**Delivery and Receipt Information** 

Delivery Method: <u>ELLE Courier</u> Arrival Timestamp: <u>08/13/2019\_18:11</u>

Number of Packages: 1 Number of Projects: 1

State/Province of Origin: NJ

**Arrival Condition Summary** 

Shipping Container Sealed: Yes Sample IDs on COC match Containers: Yes

Custody Seal Present: Yes Sample Date/Times match COC: Yes

Custody Seal Intact: Yes Total Trip Blank Qty: 0

Samples Chilled: Yes Air Quality Samples Present: No

Paperwork Enclosed: Yes

Samples Intact: Yes
Missing Samples: No

Extra Samples: No

Discrepancy in Container Qty on COC: No

Unpacked by Shalynn Ponzo (16 735) at 00:46 on 08/14/2019

**Samples Chilled Details** 

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler# Matrix Thermometer ID Corrected Temp Therm. Type Ice Type Ice Present? Ice Container **Elevated Temp?** DT Wet Ν Water DT42-03 40 Bagged



Dry weight

basis

## **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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## **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.









### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: September 24, 2019 13:13

**Project: CWK - J-26 TRENCH SAMPLING** 

Account #: 44293 Group Number: 2061073 SDG: CHK01 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Electronic Copy To AECOM Electronic Copy To AECOM Attn: Mike Aucoin Attn: Scott Norcross Attn: Kathy West

Kerri Sachtleben

Respectfully Submitted,

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









### **SAMPLE INFORMATION**

**Client Sample Description** 

Sample Collection
Date/Time

ELLE#

J-26 TRENCH-8/23/19 Surface Water

08/23/2019 09:45

1137431

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



## Case Narrative

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Project Name: CWK - J-26 TRENCH SAMPLING

ELLE Group #: 2061073

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1137431

The recovery for the sample injection standard and the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was reextracted outside holding time. Both sets of data are reported and included in the data package.

#### Batch #: 19248016 (Sample number(s): 1137431)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: Perfluorobutanoic acid

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1137431

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1137431

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Sample Description: J-26 TRENCH-8/23/19 Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 08/27/2019 17:15 Collection Date/Time: 08/23/2019 09:45

SDG#: CHK01-01

Chemours c/o AECOM

ELLE Sample #: WW 1137431 ELLE Group #: 2061073 Matrix: Surface Water

SDG#:	CHK0	1-01					
CAT No.	Analysis Name	CAS Nui	mber Res	sult	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous S	OP EPA537	ng/	I	ng/l	ng/l	
	T.	-PFAS-WI21398 ve	r4				
14903	9CI-PF3ONS <sup>1</sup>	756426-	58-1 1.8	U	1.8	0.46	1
	9CI-PF3ONS is the acronym						
14903	9-chlorohexadecafluoro-3-oxa 11Cl-PF3OUdS <sup>1</sup>	anonane-1-sulfonic acid 763051-9	92-9 1.8	U	1.8	0.46	1
1 1000	11CI-PF3OUdS is the acrony			Ü	1.0	0.10	
	11-Chloroeicosafluoro-3-oxau						
14903	DONA <sup>1</sup>	919005-	14-4 1.8	U	1.8	0.46	1
	DONA is the acronym for 4,8-form of ADONA.	-dioxa-3H-perfluorononar	noic acid, the fr	ee acid			
14903	10:2Fluorotelomersulfonic aci	id¹ 120226-6	60-0 4.6	U	4.6	0.91	1
14903	4:2-Fluorotelomersulfonic acid	d¹ 757124-7	72-4 1.8	U	1.8	0.46	1
14903	6:2-Fluorotelomersulfon	ic acid¹ 27619-97	7-2 <b>27</b>		4.6	1.8	1
14903	8:2-Fluorotelomersulfonic acid	d¹ 39108-34	1-4 2.7	U	2.7	0.91	1
14903	HFPODA <sup>1</sup>	13252-13	3-6 <b>36</b> 0	0,000	27,000	4,400	10000
	HFPODA is the acronym for heptafluoropropoxy)-propano	ic acid					
14903	NEtFOSAA1	2991-50-			2.7	0.46	1
	NEtFOSAA is the acronym fo	r N-ethyl perfluorooctane	sulfonamidoac	etic Acid.			
14903	NEtPFOSA <sup>1</sup>	4151-50-	2 4.6	U	4.6	0.91	1
	NEtPFOSA is the acronym fo	r N-ethylperfluoro-1-octa	nesulfonamide				
14903	NEtPFOSAE <sup>1</sup>	1691-99-	2 2.7	U	2.7	0.91	1
	NEtPFOSAE is the acronym f						
4 4000	2-(N-ethylperfluoro-1-octanes	,					
14903	NMeFOSAA1	2355-31-			1.8	0.55	1
	NMeFOSAA is the acronym fo						
14903	NMePFOSA <sup>1</sup>	31506-32			2.7	0.91	1
	NMePFOSA is the acronym for						
14903	NMePFOSAE <sup>1</sup>	24448-09	9-7 2.7	U	2.7	0.91	1
	NMePFOSAE is the acronym 2-(N-methylperfluoro-1-octano						
14903	Perfluorobutanesulfonio		<b>-</b>		1.8	0.46	1
14903	Perfluorobutanoic acid	375-22-4	• .		4.6	1.8	1
14903	Perfluorodecanesulfonic acid			U	1.8	0.46	1
14903	Perfluorodecanoic acid	335-76-2	•••		1.8	0.46	1
14903	Perfluorododecanesulfonic ad			U	2.7	0.46	1
14903	Perfluorododecanoic acid	307-55-1			1.8	0.46	1
14903	Perfluoroheptanesulfonic acid			U	1.8	0.46	1
14903	Perfluoroheptanoic acid		• •		1.8	0.46	1
14903	Perfluorohexadecanoic acid¹	67905-19		U	2.7	0.91	1
14903	Perfluorohexanesulfonic acid	355-46-4		U	1.8	0.46	1
14903	Perfluorohexanoic acid	307-24-4			1.8	0.46	1
14903	Perfluorononanesulfonic acid	1 68259-12	2-1 1.8	U	1.8	0.46	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: J-26 TRENCH-8/23/19 Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 08/27/2019 17:15 Collection Date/Time: 08/23/2019 09:45

SDG#: CHK01-01

Chemours	C/O AE	COIVI
<b>ELLE Sam</b>	ple #:	WW 1137431

ELLE Group #: 2061073 Matrix: Surface Water

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS/MS Miscellaneous SOP EPA537 T-PFAS-WI21398 ver4				ng/l	ng/l	
14903	Perfluorononanoic acid	375-95-1	8.3	1.8	0.46	1
14903	Perfluorooctadecanoic acid¹	16517-11-6	2.7 U	2.7	0.91	1
14903	Perfluorooctanesulfonamide <sup>1</sup>	754-91-6	1.8 U	1.8	0.46	1
14903	Perfluorooctanesulfonic acid	1763-23-1	5.0	1.8	0.46	1
14903	Perfluorooctanoic acid	335-67-1	44	1.8	0.46	1
14903	Perfluoropentanesulfonate <sup>1</sup>	2706-91-4	1.8 U	1.8	0.46	1
14903	Perfluoropentanoic acid	2706-90-3	88	1.8	0.46	1
14903	Perfluorotetradecanoic acid	376-06-7	1.8 U	1.8	0.46	1
14903	Perfluorotridecanoic acid	72629-94-8	1.8 U	1.8	0.46	1
14903	Perfluoroundecanoic acid	2058-94-8	1.8 U	1.8	0.46	1
The r	ecovery for the sample injection standard ar	d the labeled compo	ound			

The recovery for the sample injection standard and the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was reextracted outside holding time. Both sets of data are reported and included in the data package.

### **Sample Comments**

State of New Jersey Lab Certification No. PA011

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor					
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19248016	09/09/2019 20:48	Danielle D McCully	1					
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19248016	09/13/2019 13:00	Brian Kiser	10000					
14904	NJ PFAS Water Prep	SOP EPA537 T-PFAS-WI21398 ver4	2	19248016	09/05/2019 15:15	Danielle D McCully	1					

<sup>\*=</sup>This limit was used in the evaluation of the final result

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2061073

Reported: 09/24/2019 13:13

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name		ult	LOQ**	MDL
•	ng/l		ng/l	ng/l
Batch number: 19248016	•	ple number	(s): 1137431	•
9CI-PF3ONS	2.0	U	2.0	0.50
11CI-PF3OUdS	2.0	Ü	2.0	0.50
DONA	2.0	Ü	2.0	0.50
10:2Fluorotelomersulfonic acid	5.0	Ü	5.0	1.0
4:2-Fluorotelomersulfonic acid	2.0	U	2.0	0.50
6:2-Fluorotelomersulfonic acid	5.0	U	5.0	2.0
8:2-Fluorotelomersulfonic acid	3.0	U	3.0	1.0
HFPODA	3.0	U	3.0	0.50
NEtFOSAA	3.0	U	3.0	0.50
NEtPFOSA	5.0	U	5.0	1.0
NEtPFOSAE	3.0	U	3.0	1.0
NMeFOSAA	2.0	U	2.0	0.60
NMePFOSA	3.0	U	3.0	1.0
NMePFOSAE	3.0	U	3.0	1.0
Perfluorobutanesulfonic acid	2.0	U	2.0	0.50
Perfluorobutanoic acid	5.0	U	5.0	2.0
Perfluorodecanesulfonic acid	2.0	U	2.0	0.50
Perfluorodecanoic acid	2.0	U	2.0	0.50
Perfluorododecanesulfonic acid	3.0	U	3.0	0.50
Perfluorododecanoic acid	2.0	U	2.0	0.50
Perfluoroheptanesulfonic acid	2.0	U	2.0	0.50
Perfluoroheptanoic acid	2.0	U	2.0	0.50
Perfluorohexadecanoic acid	3.0	U	3.0	1.0
Perfluorohexanesulfonic acid	2.0	U	2.0	0.50
Perfluorohexanoic acid	2.0	U	2.0	0.50
Perfluorononanesulfonic acid	2.0	U	2.0	0.50
Perfluorononanoic acid	2.0	U	2.0	0.50
Perfluorooctadecanoic acid	3.0	U	3.0	1.0
Perfluorooctanesulfonamide	2.0	U	2.0	0.50
Perfluorooctanesulfonic acid	2.0	U	2.0	0.50
Perfluorooctanoic acid	2.0	U	2.0	0.50
Perfluoropentanesulfonate	2.0	U	2.0	0.50
Perfluoropentanoic acid	2.0	U	2.0	0.50
Perfluorotetradecanoic acid	2.0	U	2.0	0.50
Perfluorotridecanoic acid	2.0	U	2.0	0.50
Perfluoroundecanoic acid	2.0	U	2.0	0.50

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2061073

Reported: 09/24/2019 13:13

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19248016	Sample number	(s): 1137431							
9CI-PF3ONS	1.79	1.33	1.79	1.45	75	81	50-150	8	30
11CI-PF3OUdS	1.81	1.38	1.81	1.30	76	72	50-150	6	30
DONA	1.81	1.40	1.81	1.35	78	75	50-150	4	30
10:2Fluorotelomersulfonic acid	5.55	3.74	5.55	3.50	67	63	50-150	7	30
4:2-Fluorotelomersulfonic acid	5.38	4.30	5.38	3.80	80	71	50-150	12	30
6:2-Fluorotelomersulfonic acid	5.46	4.12	5.46	4.56	75	83	50-150	10	30
8:2-Fluorotelomersulfonic acid	5.52	3.56	5.52	3.76	64	68	50-150	5	30
HFPODA	1.92	1.45	1.92	1.54	76	80	50-150	6	30
NEtFOSAA	1.92	1.13	1.92	1.25	59	65	50-150	10	30
NEtPFOSA	1.92	1.59	1.92	1.25	83	65	50-150	24	30
NEtPFOSAE	1.92	1.26	1.92	1.31	66	68	50-150	4	30
NMeFOSAA	1.92	1.50	1.92	1.45	78	76	50-150	3	30
NMePFOSA	1.92	1.41	1.92	1.64	73	85	50-150	15	30
NMePFOSAE	1.92	1.36	1.92	1.53	71	80	50-150	12	30
Perfluorobutanesulfonic acid	1.70	1.41	1.70	1.42	83	84	50-150	1	30
Perfluorobutanoic acid	1.92	5.0 U	1.92	5.0 U	0*	0*	50-150	0	30
Perfluorodecanesulfonic acid	1.85	1.78	1.85	1.80	96	97	50-150	1	30
Perfluorodecanoic acid	1.92	1.53	1.92	1.54	80	80	50-150	1	30
Perfluorododecanesulfonic acid	1.86	1.47	1.86	1.55	79	83	50-150	5	30
Perfluorododecanoic acid	1.92	1.81	1.92	1.63	94	85	50-150	10	30
Perfluoroheptanesulfonic acid	1.83	1.62	1.83	1.51	89	83	50-150	7	30
Perfluoroheptanoic acid	1.92	1.60	1.92	1.64	83	86	50-150	3	30
Perfluorohexadecanoic acid	1.92	1.61	1.92	1.69	84	88	50-150	5	30
Perfluorohexanesulfonic acid	1.82	1.59	1.82	1.50	88	83	50-150	6	30
Perfluorohexanoic acid	1.92	1.55	1.92	1.65	80	86	50-150	6	30
Perfluorononanesulfonic acid	1.84	1.72	1.84	1.53	93	83	50-150	12	30
Perfluorononanoic acid	1.92	1.60	1.92	1.68	83	87	50-150	5	30
Perfluorooctadecanoic acid	1.92	1.71	1.92	1.68	89	87	50-150	2	30
Perfluorooctanesulfonamide	1.92	1.47	1.92	1.51	77	79	50-150	3	30
Perfluorooctanesulfonic acid	1.84	1.41	1.84	1.47	77	80	50-150	4	30
Perfluorooctanoic acid	1.92	1.64	1.92	1.78	85	93	50-150	8	30
Perfluoropentanesulfonate	1.80	1.45	1.80	1.50	81	83	50-150	3	30
Perfluoropentanoic acid	1.92	1.68	1.92	1.60	88	83	50-150	5	30
Perfluorotetradecanoic acid	1.92	1.55	1.92	1.61	80	84	50-150	4	30
Perfluorotridecanoic acid	1.92	1.40	1.92	1.27	73	66	50-150	9	30
Perfluoroundecanoic acid	1.92	1.67	1.92	1.51	87	79	50-150	10	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2061073

Reported: 09/24/2019 13:13

### **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19248016

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1137431	88	137	169*	160	74	85
Blank	94	93	85	128	97	93
LCS	87	83	82	109	90	83
LCSD	91	89	86	119	92	85
Limits:	33-123	31-157	26-148	21-182	35-138	34-126
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1137431	83	101	91	89	77	85
Blank	100	144	97	93	102	99
LCS	90	116	89	91	96	83
LCSD	95	124	91	91	92	90
Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1137431	90	92	89	89	16*	50
Blank	133	90	95	101	87	84
LCS	115	81	83	90	76	81
LCSD	123	88	90	96	86	84
Limits:	27-164	30-127	30-128	30-142	39-130	26-119
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1137431	103	49	75	84	38	3*
Blank	95	80	57	93	60	92
LCS	84	70	32	74	36	83
LCSD	88	82	53	89	52	93
Limits:	11-127	10-128	10-104	10-121	10-106	70-130

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

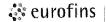
# Environmental Analysis Request/Chain of Custody

eurofins :

**Lancaster Laboratories** Environmental

Group # 2061073 Sample #//37431

Client: Chemours c/o of AECOM					Matrix				Analyses Requested						For Lab Us	e Only				
Project Name: CWK - J-26 TRENCH SAMPLING	Site ID #:								Preservation and Filtration Codes							SF#: <u>324067</u>				
Project Manager: Kothy West	P.O.#				Tissue	ind													SCR#: <u>24751</u>	<u>7</u>
Sampler: A. Heibel / U 7000	PWSID #:	PWSID #:			Tis	Ground		s					·						Preservat	ion Codes
Phone #: 856 - 540 - 2050	Quote #: 2	219712			۱			Total # of Containers											H = HCI	T = Thiosulfate
State where samples were collected: NJ For C	Compliance:	Yes 🗸	No		Sediment	ble		onta	ਉ										N = HNO <sub>3</sub>	B = NaOH
	Calle			ite	Sed	Potable NPDES		of Co	7 Mod)										S = H₂SO₄	P = H <sub>3</sub> PO <sub>4</sub>
	Colle	ection		Composite		I	jr:	# [	S (537										F = Field Filtered	O = Other
Sample Identification	Date	Time	Grab	Con	Soil	Water	Other:	Tota	PFAS										Rem	arks
J-26 TRENCH - 8/23/19	8/23/19	0945	×			Х			Χ.											
0,00,11	7 5711	, (6																		
																				***************************************
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								2												,"
									, comp											
Turnaround Time Requested (TAT) (please check	k): Stan	dard 🗹	Rush		Relir	ngrafshigg	by:	7./1	T	Da <sup>*</sup>	te	, Tir	ne	Rece		•			Date	Time
(Rush TAT is subject to laboratory approv	al and surch	arges.)				IIII)			G;	/l//	U]	191	16			61	lved.		8/24/19	ෙදුන
Date results are needed:						nquished	•	,	V	Da	tè	Tir		Rece	ived	by:			Date	Time
Rush results requested by (please check): E-M	ail 🗌	Phor	ne 🗀	]		rusta t				9/27	/14	12	6:) 	A CONTRACTOR OF THE PARTY OF TH						
E-mail Address:					Relir	nquished	by:			Da	te	Tir	ne	Rece	ived	by:	and the same of th		Date	Time
Phone:						***									and the same of th	ALE PARTY OF THE P				
Data Package Options (please check if required)					Relir	nquished	by:			Da	te	Tir	ne	Réce	ived	by:			Date	Time
Type I (Validation/non-CLP)       MA MCP													5.							
Type III (Reduced non-CLP)					Relir	nquished	by:	-		Dat	te	Tir	ne	Rece	ived	by:			Date	Time
Type VI (Raw Data Only) 🔲 TX TRRP	-13														19				8-27-19	17:15
NJ DKQP NYSDEC	Category	☐ A or	· 🔲 I	В	Relin	rquished	by Co	mme	ercial	Carrie	r: ~	à		1	7				01-	
EDD Required? Yes 🕢 No 🔲 💮 If ye	s, format:	Locus EIM			UPS		FedE	x		Other	_	_		Temp	eratu	ure up	on re	ceipt	0.6	_ °C



Lancaster Laboratories Environmental

### Sample Administration Receipt Documentation Log

258483 Doc Log ID: 

Group Number(s): 2061073

Client: CHEMOURS

**Delivery and Receipt Information** 

**Delivery Method:** 

**ELLE Courier** 

Arrival Timestamp:

08/27/2019 17:15

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

NJ

**Arrival Condition Summary** 

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

Total Trip Blank Qty:

0

Samples Chilled:

Yes

Air Quality Samples Present:

No

Paperwork Enclosed:

Yes

Samples Intact:

Yes

Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

Nο

Unpacked by Jessenia Colon Martinez (30 856) at 17:44 on 08/27/2019

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler #

Matrix Water

Thermometer ID Corrected Temp DT42-01 0.6

Therm. Type

DT

Ice Type Wet

Υ

Loose

Ν



Dry weight

basis

## **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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## **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.









### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: September 26, 2019 10:58

**Project: CWK - J-26 TRENCH SAMPLING** 

Account #: 44293 Group Number: 2063378 SDG: CHK02 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Electronic Copy To AECOM Electronic Copy To AECOM Attn: Mike Aucoin Attn: Scott Norcross Attn: Kathy West

Kerri Sachtleben

Respectfully Submitted,

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









### **SAMPLE INFORMATION**

**Client Sample Description** 

Sample Collection Date/Time

ELLE#

J-26 TRENCH-9/6/19 Grab Surface Water

09/06/2019 10:15

1147517

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



## Case Narrative

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Project Name: CWK - J-26 TRENCH SAMPLING

ELLE Group #: 2063378

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1147517

The sample injection standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for several extraction standards is outside of the QC acceptance limits as noted on the QC Summary, due to the matrix of the sample.

### Batch #: 19261020 (Sample number(s): 1147517)

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1147517

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1147517

ELLE Sample #: WW 1147517

2063378

Chemours c/o AECOM

Matrix: Surface Water

**ELLE Group #:** 

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: J-26 TRENCH-9/6/19 Grab Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 09/11/2019 16:09 Collection Date/Time: 09/06/2019 10:15

SDG#: CHK02-01

CAT No.	Analysis Name		CAS Number	Res	ult	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous	SOP EPA537	•	ng/l		ng/l	ng/l	
		T-PFAS-WI2	1398 ver4					
14903	9CI-PF3ONS <sup>1</sup>		756426-58-1	1.9	U	1.9	0.47	1
	9CI-PF3ONS is the acrony 9-chlorohexadecafluoro-3-		onic acid					
14903	11CI-PF3OUdS1		763051-92-9	1.9	U	1.9	0.47	1
	11CI-PF3OUdS is the acro 11-Chloroeicosafluoro-3-o		fonic acid					
14903	DONA <sup>1</sup>		919005-14-4	1.9	U	1.9	0.47	1
	DONA is the acronym for 4 form of ADONA.	4,8-dioxa-3H-perfl	uorononanoic acid,	the fre	ee acid			
14903	10:2Fluorotelomersulfonic	acid¹	120226-60-0	4.7		4.7	0.93	1
14903	4:2-Fluorotelomersulfonic	acid¹	757124-72-4	1.9	U	1.9	0.47	1
14903	6:2-Fluorotelomersulf		27619-97-2	140		4.7	1.9	1
14903	8:2-Fluorotelomersulfonic	acid¹	39108-34-4	2.8	U	2.8	0.93	1
14903	HFPODA <sup>1</sup>		13252-13-6	6,60	00	280	47	100
	HFPODA is the acronym for heptafluoropropoxy)-propa		•					
14903	NEtFOSAA¹		2991-50-6	2.8		2.8	0.47	1
	NEtFOSAA is the acronym	n for N-ethyl perflu						
14903	NEtPFOSA <sup>1</sup>		4151-50-2	4.7	U	4.7	0.93	1
	NEtPFOSA is the acronym	n for N-ethylperfluo						
14903	NEtPFOSAE <sup>1</sup>		1691-99-2	2.8	U	2.8	0.93	1
	NEtPFOSAE is the acrony 2-(N-ethylperfluoro-1-octar							
14903	NMeFOSAA¹		2355-31-9		U	1.9	0.56	1
	NMeFOSAA is the acrony	m for N-methyl pe	rfluorooctanesulfon	amido	acetic Acid.			
14903	NMePFOSA <sup>1</sup>		31506-32-8	2.8	U	2.8	0.93	1
	NMePFOSA is the acronyr	m for N-methylper	fluoro-1-octanesulfo	onami	de			
14903	NMePFOSAE <sup>1</sup>		24448-09-7	2.8	U	2.8	0.93	1
	NMePFOSAE is the acron 2-(N-methylperfluoro-1-oct		ethanol					
14903	Perfluorobutanesulfo	nic acid	375-73-5	5.7		1.9	0.47	1
14903	Perfluorobutanoic aci		375-22-4	120		4.7	1.9	1
14903	Perfluorodecanesulfonic a	cid¹	335-77-3	1.9	U	1.9	0.47	1
14903	Perfluorodecanoic ac	id	335-76-2	4.2		1.9	0.47	1
14903	Perfluorododecanesulfonio	c acid¹	79780-39-5	2.8	U	2.8	0.47	1
14903	Perfluorododecanoic acid		307-55-1	1.9	U	1.9	0.47	1
14903	Perfluoroheptanesulfonic a	acid¹	375-92-8	1.9	U	1.9	0.47	1
14903	Perfluoroheptanoic ad		375-85-9	21		1.9	0.47	1
14903	Perfluorohexadecanoic ac		67905-19-5	2.8	U	2.8	0.93	1
14903	Perfluorohexanesulfonic a	cid	355-46-4	1.9	U	1.9	0.47	1
14903	Perfluorohexanoic ac		307-24-4	64		1.9	0.47	1
14903	Perfluorononanesulfonic a	cid¹	68259-12-1	1.9	U	1.9	0.47	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: J-26 TRENCH-9/6/19 Grab Surface Water

J-26 TRENCH SAMPLING

**CWK - J-26 TRENCH SAMPLING** 

Submittal Date/Time: 09/11/2019 16:09 Collection Date/Time: 09/06/2019 10:15

SDG#: CHK02-01

**Project Name:** 

ELLE Sample #: WW 1147517

ELLE G	roup #:	2063378
Matrix:	Surface	Water

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPA5 T-PFAS-W	537 121398 ver4	ng/l	ng/l	ng/l	
14903	Perfluorononanoic acid	375-95-1	7.6	1.9	0.47	1
14903	Perfluorooctadecanoic acid¹	16517-11-6	2.8 U	2.8	0.93	1
14903	Perfluorooctanesulfonamide <sup>1</sup>	754-91-6	1.9 U	1.9	0.47	1
14903	Perfluorooctanesulfonic acid	1763-23-1	5.3	1.9	0.47	1
14903	Perfluorooctanoic acid	335-67-1	36	1.9	0.47	1
14903	Perfluoropentanesulfonate <sup>1</sup>	2706-91-4	1.9 U	1.9	0.47	1
14903	Perfluoropentanoic acid	2706-90-3	53	1.9	0.47	1
14903	Perfluorotetradecanoic acid	376-06-7	1.9 U	1.9	0.47	1
14903	Perfluorotridecanoic acid	72629-94-8	1.9 U	1.9	0.47	1
14903	Perfluoroundecanoic acid	2058-94-8	1.9 U	1.9	0.47	1
	ample injection standard peak areas were for both the initial injection and the re-injec					

are from the initial injection of the sample.

The recovery for several extraction standards is outside of the QC acceptance limits as noted on the QC Summary, due to the matrix of the sample.

### **Sample Comments**

State of New Jersey Lab Certification No. PA011

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

	Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19261020	09/20/2019 11:02	Danielle D McCully	1	
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19261020	09/24/2019 03:16	Jason W Knight	100	
14904	NJ PFAS Water Prep	SOP EPA537 T-PFAS-WI21398 ver4	1	19261020	09/18/2019 17:00	Anthony C Polaski	1	

<sup>\*=</sup>This limit was used in the evaluation of the final result

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2063378

Reported: 09/26/2019 10:58

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name	Res	ult	LOQ**	MDL
•	ng/l		ng/l	ng/l
Batch number: 19261020	•	ple number	(s): 1147517	•
9CI-PF3ONS	2.0	U	2.0	0.50
11CI-PF3OUdS	2.0	Ū	2.0	0.50
DONA	2.0	Ū	2.0	0.50
10:2Fluorotelomersulfonic acid	5.0	Ü	5.0	1.0
4:2-Fluorotelomersulfonic acid	2.0	U	2.0	0.50
6:2-Fluorotelomersulfonic acid	5.0	U	5.0	2.0
8:2-Fluorotelomersulfonic acid	3.0	U	3.0	1.0
HFPODA	3.0	U	3.0	0.50
NEtFOSAA	3.0	U	3.0	0.50
NEtPFOSA	5.0	U	5.0	1.0
NEtPFOSAE	3.0	U	3.0	1.0
NMeFOSAA	2.0	U	2.0	0.60
NMePFOSA	3.0	U	3.0	1.0
NMePFOSAE	3.0	U	3.0	1.0
Perfluorobutanesulfonic acid	2.0	U	2.0	0.50
Perfluorobutanoic acid	5.0	U	5.0	2.0
Perfluorodecanesulfonic acid	2.0	U	2.0	0.50
Perfluorodecanoic acid	2.0	U	2.0	0.50
Perfluorododecanesulfonic acid	3.0	U	3.0	0.50
Perfluorododecanoic acid	2.0	U	2.0	0.50
Perfluoroheptanesulfonic acid	2.0	U	2.0	0.50
Perfluoroheptanoic acid	2.0	U	2.0	0.50
Perfluorohexadecanoic acid	3.0	U	3.0	1.0
Perfluorohexanesulfonic acid	2.0	U	2.0	0.50
Perfluorohexanoic acid	2.0	U	2.0	0.50
Perfluorononanesulfonic acid	2.0	U	2.0	0.50
Perfluorononanoic acid	2.0	U	2.0	0.50
Perfluorooctadecanoic acid	3.0	U	3.0	1.0
Perfluorooctanesulfonamide	2.0	U	2.0	0.50
Perfluorooctanesulfonic acid	2.0	U	2.0	0.50
Perfluorooctanoic acid	2.0	U	2.0	0.50
Perfluoropentanesulfonate	2.0	U	2.0	0.50
Perfluoropentanoic acid	2.0	U	2.0	0.50
Perfluorotetradecanoic acid	2.0	U	2.0	0.50
Perfluorotridecanoic acid	2.0	U	2.0	0.50
Perfluoroundecanoic acid	2.0	U	2.0	0.50

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2063378

Reported: 09/26/2019 10:58

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19261020	Sample number(	s): 1147517							
9CI-PF3ONS	44.74	41.09	44.74	40.25	92	90	70-130	2	30
11CI-PF3OUdS	45.22	43.53	45.22	41.92	96	93	70-130	4	30
DONA	45.22	55.93	45.22	51.17	124	113	70-130	9	30
10:2Fluorotelomersulfonic acid	46.27	50.09	46.27	48.49	108	105	70-130	3	30
4:2-Fluorotelomersulfonic acid	44.83	43.31	44.83	40.65	97	91	70-130	6	30
6:2-Fluorotelomersulfonic acid	45.5	41.95	45.5	47.28	92	104	70-130	12	30
8:2-Fluorotelomersulfonic acid	45.98	44.54	45.98	44.98	97	98	70-130	1	30
HFPODA	48	34.19	48	35.64	71	74	70-130	4	30
NEtFOSAA	48	42.6	48	43.03	89	90	70-130	1	30
NEtPFOSA	48	42.65	48	43.76	89	91	70-130	3	30
NEtPFOSAE	48	44.3	48	42.32	92	88	70-130	5	30
NMeFOSAA	48	46.77	48	42.74	97	89	70-130	9	30
NMePFOSA	48	45.16	48	45.97	94	96	70-130	2	30
NMePFOSAE	48	43.63	48	41.47	91	86	70-130	5	30
Perfluorobutanesulfonic acid	42.46	43.37	42.46	42.57	102	100	70-130	2	30
Perfluorobutanoic acid	48	49.51	48	50.26	103	105	70-130	1	30
Perfluorodecanesulfonic acid	46.22	49.92	46.22	47.14	108	102	70-130	6	30
Perfluorodecanoic acid	48	52.62	48	53.12	110	111	70-130	1	30
Perfluorododecanesulfonic acid	46.46	49.19	46.46	50.02	106	108	70-130	2	30
Perfluorododecanoic acid	48	51.48	48	53.94	107	112	70-130	5	30
Perfluoroheptanesulfonic acid	45.67	49.21	45.67	49.92	108	109	70-130	1	30
Perfluoroheptanoic acid	48	53.15	48	50.35	111	105	70-130	5	30
Perfluorohexadecanoic acid	48	47.78	48	42.2	100	88	70-130	12	30
Perfluorohexanesulfonic acid	45.38	43.71	45.38	43.47	96	96	70-130	1	30
Perfluorohexanoic acid	48	52.03	48	50.64	108	106	70-130	3	30
Perfluorononanesulfonic acid	46.08	53.86	46.08	48.49	117	105	70-130	10	30
Perfluorononanoic acid	48	52.69	48	51.92	110	108	70-130	1	30
Perfluorooctadecanoic acid	48	57.04	48	49.15	119	102	70-130	15	30
Perfluorooctanesulfonamide	48	45.69	48	44.1	95	92	70-130	4	30
Perfluorooctanesulfonic acid	45.89	43.33	45.89	39.91	94	87	70-130	8	30
Perfluorooctanoic acid	48	49.85	48	50.27	104	105	70-130	1	30
Perfluoropentanesulfonate	45.02	49.75	45.02	49.59	110	110	70-130	0	30
Perfluoropentanoic acid	48	53.61	48	52.32	112	109	70-130	2	30
Perfluorotetradecanoic acid	48	50.87	48	52.95	106	110	70-130	4	30
Perfluorotridecanoic acid	48	52	48	51.13	108	107	70-130	2	30
Perfluoroundecanoic acid	48	50.85	48	51.42	106	107	70-130	1	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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### **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2063378

Reported: 09/26/2019 10:58

### **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19261020

Daton namb	01. 10201020					
	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1147517	109	200*	263*	218*	95	114
Blank	83	81	76	88	80	84
LCS	86	83	83	93	83	85
LCSD	84	79	78	94	85	84
Limits:	33-123	31-157	26-148	21-182	35-138	34-126
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1147517	116	182*	114	116	122	110
Blank	84	88	81	81	80	87
LCS	82	91	81	81	83	83
LCSD	87	84	81	81	76	82
Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1147517	155	145*	110	140	66	84
Blank	103	101	85	103	85	85
LCS	87	93	85	99	85	82
LCSD	93	104	88	107	89	95
Limits:	27-164	30-127	30-128	30-142	39-130	26-119
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1147517	101	78	30	76	29	33*
Blank	87	82	57	83	60	122
LCS	88	82	48	85	50	121
LCSD	91	86	49	88	48	117
Limits:	11-127	10-128	10-104	10-121	10-106	70-130

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

# Environmental Analysis Request/Chain of Custody

eurofins

Lancaster Laboratories Environmental

Acct# 44293

Group # <u>2043378</u> Sample # <u>1147517</u>

Client: Chemours c/o of AECOM					Matrix				Analyses Requested						For Lab Us	se Only		
Project Name: CWK - J-26 TRENCH SAMPLING	Site ID #:									Pre	serv	ation an	d Filt	ratio	n Co	des	SF#: <u>324067</u>	
Project Manager:	P.O.#			Tissire	pur	ace											SCR#: <u>2475</u>	<u>17</u>
Sampler: A. Heibel / UTOD PWSID#:		<u>i</u>	Ground	Surface		ر د									Preserva	tion Codes		
Phone #: 856 - 540 - 2056 Quote #: 219712		] <del> </del>				Containers									H = HCI	T = Thiosulfate		
· · · · · · · · · · · · · · · · · · ·	r Compliance:	Yes 🗸	No [	] [	ple	ES		onta	क्र								N = HNO <sub>3</sub>	B = NaOH
	Colle	ction		Soil Sediment	Potable		::	Total # of Co	s (537 Mod)								S = H <sub>2</sub> SO <sub>4</sub> F = Field Filtered	$P = H_3PO_4$ O = Other
Sample Identification	Date	Time	Grab			Water	Other:	Tota	PFAS								Ren	narks
J-26 TRENCH - 9/6/19	9/6/19	1015	X		Х			2	Х								<u>.</u>	
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Type VI (Raw Data Only) 🔲 TX TRF	RP-13				/								Ch	witi	WY	Wy Loll	9/18/19	#62
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Lancaster Laboratories Environmental

### Sample Administration Receipt Documentation Log

Doc Log ID:

259759

Group Number(s): 20633 78

Client: AECOM

**Delivery and Receipt Information** 

**Delivery Method:** 

**ELLE Courier** 

Arrival Date:

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

NJ

**Arrival Condition Summary** 

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

**Custody Seal Present:** 

Yes

Sample Date/Times match COC:

Yes

**Custody Seal Intact:** 

Yes

Total Trip Blank Qty:

0

Samples Chilled:

Yes

Air Quality Samples Present:

No

Paperwork Enclosed:

Yes

Samples Intact:

Yes

Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Darian Jaynes (29 952) at 16:09 on 09/11/2019

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

1.1

IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler# 1

**Matrix** Water

Thermometer ID Corrected Temp 192099060

Therm. Type

IR

Ice Type Wet

Ice Present? Ice Container Elevated Temp?

Loose/Bag



Dry weight

basis

## **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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## **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.









### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: October 15, 2019 10:33

**Project: CWK - J-26 TRENCH SAMPLING** 

Account #: 44293 Group Number: 2065879 SDG: CWK02 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Electronic Copy To AECOM Electronic Copy To AECOM Attn: Mike Aucoin Attn: Scott Norcross Attn: Kathy West

Kerri Sachtleben

Respectfully Submitted,

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









### **SAMPLE INFORMATION**

**Client Sample Description** 

Sample Collection
Date/Time

ELLE#

J-26 TRENCH-092419 Grab Surface Water

09/24/2019 09:10

1159678

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



## Case Narrative

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Project Name: CWK - J-26 TRENCH SAMPLING

ELLE Group #: 2065879

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1159678

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

#### Batch #: 19273010 (Sample number(s): 1159678)

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1159678

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1159678

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Sample Description: J-26 TRENCH-092419 Grab Surface Water

J-26 TRENCH SAMPLING

**CWK - J-26 TRENCH SAMPLING Project Name:** 

Submittal Date/Time: 09/24/2019 17:08 Collection Date/Time: 09/24/2019 09:10 SDG#:

CAT

No.

14903

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Perfluorononanesulfonic acid1

Chemours c/o AECOM

0.48

**ELLE Sample #:** WW 1159678 **ELLE Group #:** 2065879 Matrix: Surface Water

CWK02-01 Limit of Method Dilution **CAS Number** Quantitation\* **Detection Limit Analysis Name** Result Factor na/l ng/l **SOP EPA537** na/l LC/MS/MS Miscellaneous T-PFAS-WI21398 ver4 9CI-PF3ONS1 756426-58-1 1.9 1.9 0.48 9CI-PF3ONS is the acronym for Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid 11CI-PF3OUdS1 763051-92-9 1.9 U 1.9 0.48 11CI-PF3OUdS is the acronym for 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid DONA1 919005-14-4 19 U 19 0.48 1 DONA is the acronym for 4,8-dioxa-3H-perfluorononanoic acid, the free acid form of ADONA. 4.8 U 10:2Fluorotelomersulfonic acid1 120226-60-0 4.8 0.96 1 4:2-Fluorotelomersulfonic acid1 757124-72-4 1.9 U 1.9 0.48 1 27619-97-2 4.8 1.9 6:2-Fluorotelomersulfonic acid1 90 8:2-Fluorotelomersulfonic acid1 39108-34-4 2.9 2.9 0.96 13252-13-6 29 4.8 10 HFPODA1 2,100 HFPODA is the acronym for 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3heptafluoropropoxy)-propanoic acid 2991-50-6 29 U 29 **NEtFOSAA** 0.48 1 NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. 4151-50-2 4.8 4.8 0.96 NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide NEtPFOSAE1 1691-99-2 2.9 U 2.9 0.96 NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol 2355-31-9 1.9 U 1.9 0.57 NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. NMePFOSA1 29 31506-32-8 2.9 0.96 NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide NMePFOSAE<sup>1</sup> 24448-09-7 2.9 2.9 0.96 NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol 375-73-5 19 0.48 Perfluorobutanesulfonic acid 6.5 Perfluorobutanoic acid 375-22-4 100 4.8 1.9 Perfluorodecanesulfonic acid1 335-77-3 1.9 U 1.9 0.48 335-76-2 1.9 0.48 Perfluorodecanoic acid 4.5 Perfluorododecanesulfonic acid<sup>1</sup> 79780-39-5 U 2.9 2.9 0.48 307-55-1 1.9 0.48 Perfluorododecanoic acid 2.1 Perfluoroheptanesulfonic acid1 375-92-8 U 1.9 0.48 1.9 375-85-9 19 0.48 Perfluoroheptanoic acid 18 Perfluorohexadecanoic acid1 67905-19-5 2.9 U 2.9 0.96 Perfluorohexanesulfonic acid 355-46-4 1.9 U 1.9 0.48 307-24-4 1.9 0.48 Perfluorohexanoic acid 67 1

1.9

68259-12-1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: J-26 TRENCH-092419 Grab Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 09/24/2019 17:08 Collection Date/Time: 09/24/2019 09:10

SDG#: CWK02-01

Chemours c/o AECOM

ELLE Sample #: WW 1159678 ELLE Group #: 2065879

Matrix: Surface Water

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPA5 T-PFAS-W	537 /I21398 ver4	ng/l	ng/l	ng/l	
14903	Perfluorononanoic acid	375-95-1	5.3	1.9	0.48	1
14903	Perfluorooctadecanoic acid¹	16517-11-6	2.9 U	2.9	0.96	1
14903	Perfluorooctanesulfonamide <sup>1</sup>	754-91-6	1.9 U	1.9	0.48	1
14903	Perfluorooctanesulfonic acid	1763-23-1	3.4	1.9	0.48	1
14903	Perfluorooctanoic acid	335-67-1	35	1.9	0.48	1
14903	Perfluoropentanesulfonate <sup>1</sup>	2706-91-4	1.9 U	1.9	0.48	1
14903	Perfluoropentanoic acid	2706-90-3	83	1.9	0.48	1
14903	Perfluorotetradecanoic acid	376-06-7	1.9 U	1.9	0.48	1
14903	Perfluorotridecanoic acid	72629-94-8	1.9 U	1.9	0.48	1
14903	Perfluoroundecanoic acid	2058-94-8	1.9 U	1.9	0.48	1
is out	ecovery for labeled compound used as extractions as a subsection of QC acceptance limits as noted on the matrix of the sample.					

### **Sample Comments**

State of New Jersey Lab Certification No. PA011

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19273010	10/04/2019 11:03	Brian Kiser	1				
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19273010	10/07/2019 15:22	Brian Kiser	10				
14904	NJ PFAS Water Prep	SOP EPA537 T-PFAS-WI21398 ver4	1	19273010	09/30/2019 19:00	Anthony C Polaski	1				

<sup>\*=</sup>This limit was used in the evaluation of the final result

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2065879

Reported: 10/15/2019 10:33

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name	Res	ult	LOQ**	MDL
·	ng/l		ng/l	ng/l
Batch number: 19273010	•	iple numl	ber(s): 1159678	J
9CI-PF3ONS	2.0	U	2.0	0.50
11CI-PF3OUdS	2.0	Ü	2.0	0.50
DONA	2.0	Ü	2.0	0.50
10:2Fluorotelomersulfonic acid	5.0	Ü	5.0	1.0
4:2-Fluorotelomersulfonic acid	2.0	Ū	2.0	0.50
6:2-Fluorotelomersulfonic acid	5.0	Ū	5.0	2.0
8:2-Fluorotelomersulfonic acid	3.0	U	3.0	1.0
HFPODA	3.0	U	3.0	0.50
NEtFOSAA	3.0	U	3.0	0.50
NEtPFOSA	5.0	U	5.0	1.0
NEtPFOSAE	3.0	U	3.0	1.0
NMeFOSAA	2.0	U	2.0	0.60
NMePFOSA	3.0	U	3.0	1.0
NMePFOSAE	3.0	U	3.0	1.0
Perfluorobutanesulfonic acid	2.0	U	2.0	0.50
Perfluorobutanoic acid	5.0	U	5.0	2.0
Perfluorodecanesulfonic acid	2.0	U	2.0	0.50
Perfluorodecanoic acid	2.0	U	2.0	0.50
Perfluorododecanesulfonic acid	3.0	U	3.0	0.50
Perfluorododecanoic acid	2.0	U	2.0	0.50
Perfluoroheptanesulfonic acid	2.0	U	2.0	0.50
Perfluoroheptanoic acid	2.0	U	2.0	0.50
Perfluorohexadecanoic acid	3.0	U	3.0	1.0
Perfluorohexanesulfonic acid	2.0	U	2.0	0.50
Perfluorohexanoic acid	2.0	U	2.0	0.50
Perfluorononanesulfonic acid	2.0	U	2.0	0.50
Perfluorononanoic acid	2.0	U	2.0	0.50
Perfluorooctadecanoic acid	3.0	U	3.0	1.0
Perfluorooctanesulfonamide	2.0	U	2.0	0.50
Perfluorooctanesulfonic acid	2.0	U	2.0	0.50
Perfluorooctanoic acid	2.0	U	2.0	0.50
Perfluoropentanesulfonate	2.0	U	2.0	0.50
Perfluoropentanoic acid	2.0	U	2.0	0.50
Perfluorotetradecanoic acid	2.0	U	2.0	0.50
Perfluorotridecanoic acid	2.0	U	2.0	0.50
Perfluoroundecanoic acid	2.0	U	2.0	0.50

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2065879

Reported: 10/15/2019 10:33

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19273010	Sample number(	s): 1159678							
9CI-PF3ONS	8.96	7.31	8.96	7.46	82	83	70-130	2	30
11CI-PF3OUdS	8.48	6.68	8.48	6.65	79	78	70-130	1	30
DONA	9.60	9.65	9.60	9.47	101	99	70-130	2	30
10:2Fluorotelomersulfonic acid	27.76	26.32	27.76	29.31	95	106	70-130	11	30
4:2-Fluorotelomersulfonic acid	26.9	24.21	26.9	24.77	90	92	70-130	2	30
6:2-Fluorotelomersulfonic acid	27.32	25.98	27.32	29.71	95	109	70-130	13	30
8:2-Fluorotelomersulfonic acid	27.59	21.56	27.59	21.11	78	77	70-130	2	30
HFPODA	9.60	7.54	9.60	7.70	79	80	70-130	2	30
NEtFOSAA	9.60	8.51	9.60	7.26	89	76	70-130	16	30
NEtPFOSA	9.60	8.64	9.60	8.28	90	86	70-130	4	30
NEtPFOSAE	9.60	7.22	9.60	7.04	75	73	70-130	2	30
NMeFOSAA	9.60	9.14	9.60	8.27	95	86	70-130	10	30
NMePFOSA	9.60	8.74	9.60	9.10	91	95	70-130	4	30
NMePFOSAE	9.60	7.80	9.60	7.58	81	79	70-130	3	30
Perfluorobutanesulfonic acid	8.48	7.73	8.48	7.23	91	85	70-130	7	30
Perfluorobutanoic acid	9.60	9.46	9.60	8.98	99	94	70-130	5	30
Perfluorodecanesulfonic acid	9.24	8.43	9.24	8.36	91	90	70-130	1	30
Perfluorodecanoic acid	9.60	8.56	9.60	8.80	89	92	70-130	3	30
Perfluorododecanesulfonic acid	9.60	8.53	9.60	8.56	89	89	70-130	0	30
Perfluorododecanoic acid	9.60	7.99	9.60	8.76	83	91	70-130	9	30
Perfluoroheptanesulfonic acid	9.12	7.84	9.12	8.58	86	94	70-130	9	30
Perfluoroheptanoic acid	9.60	8.98	9.60	9.06	93	94	70-130	1	30
Perfluorohexadecanoic acid	9.60	8.26	9.60	8.25	86	86	70-130	0	30
Perfluorohexanesulfonic acid	9.08	6.68	9.08	7.48	74	82	70-130	11	30
Perfluorohexanoic acid	9.60	9.18	9.60	8.14	96	85	70-130	12	30
Perfluorononanesulfonic acid	9.20	8.42	9.20	8.20	92	89	70-130	3	30
Perfluorononanoic acid	9.60	9.13	9.60	8.88	95	92	70-130	3	30
Perfluorooctadecanoic acid	9.60	8.75	9.60	9.02	91	94	70-130	3	30
Perfluorooctanesulfonamide	9.60	9.62	9.60	8.19	100	85	70-130	16	30
Perfluorooctanesulfonic acid	9.16	6.82	9.16	7.36	74	80	70-130	8	30
Perfluorooctanoic acid	9.60	8.91	9.60	8.50	93	88	70-130	5	30
Perfluoropentanesulfonate	9.00	8.46	9.00	7.76	94	86	70-130	9	30
Perfluoropentanoic acid	9.60	9.52	9.60	9.28	99	97	70-130	3	30
Perfluorotetradecanoic acid	9.60	9.11	9.60	8.39	95	87	70-130	8	30
Perfluorotridecanoic acid	9.60	8.43	9.60	9.33	88	97	70-130	10	30
Perfluoroundecanoic acid	9.60	8.37	9.60	7.77	87	81	70-130	7	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2065879

Reported: 10/15/2019 10:33

### **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19273010

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1159678	98	148	167*	178	89	98
Blank	98	99	95	110	97	103
LCS	91	91	78	89	86	97
LCSD	94	91	82	91	94	93
Limits:	33-123	31-157	26-148	21-182	35-138	34-126
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1159678	99	195*	94	97	110	87
Blank	98	119	99	103	95	98
LCS	89	84	86	91	83	88
LCSD	94	86	89	86	86	92
Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1159678	135	106	98	121	42	56
Blank	123	103	93	104	95	85
LCS	91	106	86	103	96	87
LCSD	97	119	95	124	103	101
Limits:	27-164	30-127	30-128	30-142	39-130	26-119
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1159678	84	74	43	89	43	46*
Blank	92	77	67	84	73	84
LCS	82	78	58	82	60	120
203	V-					
LCSD	95	85	73	89	77	124

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

# Environmental Analysis Request/Chain of Custody

**::** eurofins

Lancaster Laboratories Environmental

Group # 2005919 Sample # 1189678

Client: Chemours c/o of AECOM					Matrix			Analyses Requested						For Lab Us	se Only			
Project Name: CWK - J-26 TRENCH SAMPLING	Site ID #:								Pres	serv	ation a	ınd Fi	tratio	on Co	des		SF#: <u>324067</u>	
Project Manager:	P.O.#			issue	l pu							$\Box$					SCR#: <u>2475</u> 1	1 <b>7</b>
Sampler: A. Heibel / U. TEAS	PWSID#:			ું ≒	Ground												Preservat	ion Codes
Phone #: Brie - 540 - 2016	Quote #: 2			<b>│</b> ₽			Containers										H = HCI	T = Thiosulfate
	Compliance:		No [	Sediment	e Si		ntai	ন									N = HNO <sub>3</sub>	B = NaOH
			r-r	d ib	Potable NPDES		f Co	Mod)									S = H <sub>2</sub> SO <sub>4</sub>	P = H <sub>3</sub> PO <sub>4</sub>
·	Colle	ection	Grab	.   👸		<u>:</u>	l # of	3 (537									F = Field Filtered	0 = Other
Sample Identification	Date	Time	Grab	Soil	Water	Other:	Total#	PFAS									Rem	
J-26 TRENCH - 0924 19	9/24/19	0916	X		Х			Х										
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Turnaround Time Requested (TAT) (please check	•		Rush [	J .	nquished	•			Dat Fi/Ey		Time		eived	by:			Date	Time
(Rush TAT is subject to laboratory approv	al and surch	arges.)			nquished				Dat		1てい Time		eived	hui			Date	Time
Date results are needed:	- Francis			- Keii	IIquisileu	Dy.			Da	ıe	THIE	IVe.	erveu	by. <			Date	rime
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E-mail Address:				T.C.	iquisileu	DX.			Da	ıc	111110		civeu	by.		1	Date	Time
Phone:				Reli	nguished	hv.	$\overline{}$		Dat	le l	Time	Red	eived	hv:		$\dashv$	Date	Time
Data Package Options (please check if required) Type I (Validation/non-CLP)  MA MCP				1.011	iquioriou	υy.					111110		/51 <b>V</b> CQ	Dy.			Date	<b>\</b>
Type III (Reduced non-CLP) CT RCP				Reli	nquished	bv:			Dàt	te	Time	Red	elyed	bv:		$\dashv$	Date	Time
Type VI (Raw Data Only) TX TRRP	-13				. 45.5.100	, .						1	1				9-24-19	1708
NJ DKQP NYSDEC	_	☐ A or	В	Reli	nquished	by Co	mme	rcial	Carrier	l ::		-						1 [ 0 8
	s, format: I			UPS	·	FedE:			Other_			Ten	nperat	ure u	oon red	ceipt	5.6	_°C



Client:

# Sample Administration Receipt Documentation Log

Doc Log ID: 261097

Group Number(s): 2065879

**Delivery and Receipt Information** 

Delivery Method: <u>ELLE Courier</u> Arrival Date: <u>09/24/2019</u>

Number of Packages: 1 Number of Projects: 1

State/Province of Origin: NJ

Chemours c/o AECOM

**Arrival Condition Summary** 

Shipping Container Sealed: Yes Sample IDs on COC match Containers: Yes

Custody Seal Present: Yes Sample Date/Times match COC: Yes

Custody Seal Intact: Yes Total Trip Blank Qty: 0

Samples Chilled: Yes Air Quality Samples Present: No

Paperwork Enclosed: Yes

Samples Intact: Yes

Missing Samples: No

Extra Samples: No

Discrepancy in Container Qty on COC: No

Unpacked by Leah Foreman (12 616) at 15:18 on 09/25/2019

**Samples Chilled Details** 

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler # Corrected Temp Ice Container Matrix Thermometer ID Therm. Type Ice Type Ice Present? **Elevated Temp?** 192099059 5.2 IR Wet Ν Water Loose



Dry weight

basis

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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# **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.









#### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: November 11, 2019 12:18

**Project: CWK - J-26 TRENCH SAMPLING** 

Account #: 44293 Group Number: 2068476 SDG: CWK04 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Electronic Copy To AECOM Electronic Copy To AECOM Attn: Mike Aucoin Attn: Scott Norcross Attn: Kathy West

Kerri Sachtleben

Respectfully Submitted,

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









### **SAMPLE INFORMATION**

**Client Sample Description** 

Sample Collection
Date/Time

ELLE#

J-26 TRENCH-10/08/19 Surface Water

10/08/2019 08:15

1171813

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



## Case Narrative

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Project Name: CWK - J-26 TRENCH SAMPLING

ELLE Group #: 2068476

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1171813

The recovery for the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was reextracted outside holding time. Both sets of data are reported and included in the data package.

#### Batch #: 19290011 (Sample number(s): 1171813)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD exceeded the acceptance window indicating a positive bias: 10:2Fluorotelomersulfonic acid

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1171813

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1171813

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Sample Description: J-26 TRENCH-10/08/19 Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 10/08/2019 18:41 Collection Date/Time: 10/08/2019 08:15 SDG#: CWK04-01 Chemours c/o AECOM

ELLE Sample #: WW 1171813 ELLE Group #: 2068476 Matrix: Surface Water

CAT No.	Analysis Name	CAS Number	Re	sult	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPA53	7	ng	/I	ng/l	ng/l	
	T-PFAS-WI2	1398 ver4					
14903	9CI-PF3ONS <sup>1</sup>	756426-58-1	1.9	U	1.9	0.48	1
	9CI-PF3ONS is the acronym for Potassium	1					
	9-chlorohexadecafluoro-3-oxanonane-1-su						
14903	11Cl-PF3OUdS <sup>1</sup>	763051-92-9	1.9	U	1.9	0.48	1
	11CI-PF3OUdS is the acronym for 11-Chloroeicosafluoro-3-oxaundecane-1-su	ulfania asid					
14903	DONA <sup>1</sup>	919005-14-4	1.9	U	1.9	0.48	1
14000	DONA is the acronym for 4,8-dioxa-3H-per				1.0	0.40	•
	form of ADONA.	adiononanoio adia,		100 4014			
14903	10:2Fluorotelomersulfonic acid¹	120226-60-0	4.8	U	4.8	0.96	1
14903	4:2-Fluorotelomersulfonic acid1	757124-72-4	1.9	U	1.9	0.48	1
14903	6:2-Fluorotelomersulfonic acid1	27619-97-2	32	0	48	19	10
14903	8:2-Fluorotelomersulfonic acid¹	39108-34-4	2.9	U	2.9	0.96	1
14903	HFPODA <sup>1</sup>	13252-13-6	1,3	300	29	4.8	10
	HFPODA is the acronym for 2,3,3,3-Tetraf heptafluoropropoxy)-propanoic acid	uoro-2-(1,1,2,2,3,3,3	3-				
14903	NEtFOSAA1	2991-50-6	2.9	U	2.9	0.48	1
	NEtFOSAA is the acronym for N-ethyl perfl	uorooctanesulfonam	iidoad	cetic Acid.			
14903	NEtPFOSA <sup>1</sup>	4151-50-2	4.8	U	4.8	0.96	1
	NEtPFOSA is the acronym for N-ethylperflu	oro-1-octanesulfona	amide	)			
14903	NEtPFOSAE <sup>1</sup>	1691-99-2	2.9	U	2.9	0.96	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-e	thanol					
14903	NMeFOSAA¹	2355-31-9	1.9	U	1.9	0.57	1
	NMeFOSAA is the acronym for N-methyl pe	erfluorooctanesulfon	amid	oacetic Acid.			
14903	NMePFOSA <sup>1</sup>	31506-32-8	2.9	U	2.9	0.96	1
	NMePFOSA is the acronym for N-methylpe	rfluoro-1-octanesulfo	onam	ide			
14903	NMePFOSAE <sup>1</sup>	24448-09-7	2.9	U	2.9	0.96	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)	-ethanol					
14903	Perfluorobutanesulfonic acid	375-73-5	11		1.9	0.48	1
14903	Perfluorobutanoic acid	375-22-4	69		4.8	1.9	1
14903	Perfluorodecanesulfonic acid¹	335-77-3	1.9	U	1.9	0.48	1
14903	Perfluorodecanoic acid	335-76-2	4.0	)	1.9	0.48	1
14903	Perfluorododecanesulfonic acid1	79780-39-5	2.9	U	2.9	0.48	1
14903	Perfluorododecanoic acid	307-55-1	1.9	U	1.9	0.48	1
14903	Perfluoroheptanesulfonic acid1	375-92-8	1.9	U	1.9	0.48	1
14903	Perfluoroheptanoic acid	375-85-9	14		1.9	0.48	1
14903	Perfluorohexadecanoic acid¹	67905-19-5	2.9	U	2.9	0.96	1
14903	Perfluorohexanesulfonic acid	355-46-4	2.0	)	1.9	0.48	1
14903	Perfluorohexanoic acid	307-24-4	57		1.9	0.48	1
14903	Perfluorononanesulfonic acid <sup>1</sup>	68259-12-1	1.9	U	1.9	0.48	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



**ELLE Sample #: WW 1171813** 

2068476

Chemours c/o AECOM

**Matrix: Surface Water** 

**ELLE Group #:** 

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Sample Description: J-26 TRENCH-10/08/19 Surface Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 10/08/2019 18:41 Collection Date/Time: 10/08/2019 08:15

SDG#: CWK04-01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPAS		ng/l	ng/l	ng/l	
	T-PFAS-W	'l21398 ver4				
14903	Perfluorononanoic acid	375-95-1	5.5	1.9	0.48	1
14903	Perfluorooctadecanoic acid¹	16517-11-6	2.9 U	2.9	0.96	1
14903	Perfluorooctanesulfonamide <sup>1</sup>	754-91-6	1.9 U	1.9	0.48	1
14903	Perfluorooctanesulfonic acid	1763-23-1	3.9	1.9	0.48	1
14903	Perfluorooctanoic acid	335-67-1	32	1.9	0.48	1
14903	Perfluoropentanesulfonate <sup>1</sup>	2706-91-4	1.9 U	1.9	0.48	1
14903	Perfluoropentanoic acid	2706-90-3	54	1.9	0.48	1
14903	Perfluorotetradecanoic acid	376-06-7	1.9 U	1.9	0.48	1
14903	Perfluorotridecanoic acid	72629-94-8	1.9 U	1.9	0.48	1
14903	Perfluoroundecanoic acid	2058-94-8	1.9 U	1.9	0.48	1
The r	ecovery for the labeled compound used as	extraction standards	is			

outside the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was reextracted outside holding time. Both sets of data are reported and included in the data package.

### **Sample Comments**

State of New Jersey Lab Certification No. PA011

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19290011	10/23/2019 15:09	Devon M Whooley	1				
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19290011	10/25/2019 19:23	Christine E Dolman	10				
14904	NJ PFAS Water Prep	SOP EPA537 T-PFAS-WI21398 ver4	1	19290011	10/17/2019 16:30	Isaac Phillips-Cary	1				

<sup>\*=</sup>This limit was used in the evaluation of the final result

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2068476

Reported: 11/11/2019 12:18

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name	Result	LOQ**	MDL
·	ng/l	ng/l	ng/l
Batch number: 19290011	•	number(s): 1171813	
9CI-PF3ONS	2.0 U		0.50
11CI-PF3OUdS	2.0 U		0.50
DONA	2.0 U		0.50
10:2Fluorotelomersulfonic acid	5.0 U		1.0
4:2-Fluorotelomersulfonic acid	2.0 U		0.50
6:2-Fluorotelomersulfonic acid	5.0 U		2.0
8:2-Fluorotelomersulfonic acid	3.0 U		1.0
HEPODA	3.0 U		0.50
NEtFOSAA	3.0 U	3.0	0.50
NEtPFOSA	5.0 U	5.0	1.0
NEtPFOSAE	3.0 U	3.0	1.0
NMeFOSAA	2.0 U	2.0	0.60
NMePFOSA	3.0 U	3.0	1.0
NMePFOSAE	3.0 U	3.0	1.0
Perfluorobutanesulfonic acid	2.0 U	2.0	0.50
Perfluorobutanoic acid	5.0 U	5.0	2.0
Perfluorodecanesulfonic acid	2.0 U	2.0	0.50
Perfluorodecanoic acid	2.0 U	2.0	0.50
Perfluorododecanesulfonic acid	3.0 U	3.0	0.50
Perfluorododecanoic acid	2.0 U		0.50
Perfluoroheptanesulfonic acid	2.0 U		0.50
Perfluoroheptanoic acid	2.0 U		0.50
Perfluorohexadecanoic acid	3.0 U		1.0
Perfluorohexanesulfonic acid	2.0 U		0.50
Perfluorohexanoic acid	2.0 U		0.50
Perfluorononanesulfonic acid	2.0 U		0.50
Perfluorononanoic acid	2.0 U		0.50
Perfluorooctadecanoic acid	3.0 U		1.0
Perfluorooctanesulfonamide	2.0 U		0.50
Perfluorooctanesulfonic acid	2.0 U		0.50
Perfluorooctanoic acid	2.0 U		0.50
Perfluoropentanesulfonate	2.0 U		0.50
Perfluoropentanoic acid	2.0 U		0.50
Perfluorotetradecanoic acid	2.0 U		0.50
Perfluorotridecanoic acid	2.0 U		0.50
Perfluoroundecanoic acid	2.0 U	2.0	0.50

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2068476

Reported: 11/11/2019 12:18

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19290011	Sample number	(s): 1171813							
9CI-PF3ONS	8.95	8.14	8.95	8.00	91	89	70-130	2	30
11CI-PF3OUdS	9.04	6.76	9.04	6.93	75	77	70-130	2	30
DONA	9.04	8.59	9.04	9.69	95	107	70-130	12	30
10:2Fluorotelomersulfonic acid	15.76	26.5	15.76	31.57	168*	200*	70-130	17	30
4:2-Fluorotelomersulfonic acid	26.9	25.45	26.9	22.58	95	84	70-130	12	30
6:2-Fluorotelomersulfonic acid	27.3	24.53	27.3	23.15	90	85	70-130	6	30
8:2-Fluorotelomersulfonic acid	27.59	25.59	27.59	27.51	93	100	70-130	7	30
HFPODA	9.60	9.17	9.60	9.84	95	103	70-130	7	30
NEtFOSAA	9.60	8.03	9.60	8.35	84	87	70-130	4	30
NEtPFOSA	9.60	8.65	9.60	9.92	90	103	70-130	14	30
NEtPFOSAE	9.60	6.99	9.60	7.27	73	76	70-130	4	30
NMeFOSAA	9.60	8.46	9.60	7.67	88	80	70-130	10	30
NMePFOSA	9.60	7.99	9.60	8.82	83	92	70-130	10	30
NMePFOSAE	9.60	7.18	9.60	7.59	75	79	70-130	5	30
Perfluorobutanesulfonic acid	8.85	8.42	8.85	8.52	95	96	70-130	1	30
Perfluorobutanoic acid	9.60	9.66	9.60	9.61	101	100	70-130	1	30
Perfluorodecanesulfonic acid	9.24	8.09	9.24	8.15	88	88	70-130	1	30
Perfluorodecanoic acid	9.60	8.85	9.60	8.26	92	86	70-130	7	30
Perfluorododecanesulfonic acid	9.29	8.78	9.29	9.32	95	100	70-130	6	30
Perfluorododecanoic acid	9.60	8.58	9.60	9.09	89	95	70-130	6	30
Perfluoroheptanesulfonic acid	9.14	8.52	9.14	9.67	93	106	70-130	13	30
Perfluoroheptanoic acid	9.60	8.82	9.60	9.66	92	101	70-130	9	30
Perfluorohexadecanoic acid	9.60	8.72	9.60	9.52	91	99	70-130	9	30
Perfluorohexanesulfonic acid	9.08	7.53	9.08	8.43	83	93	70-130	11	30
Perfluorohexanoic acid	9.60	8.58	9.60	8.14	89	85	70-130	5	30
Perfluorononanesulfonic acid	9.22	9.73	9.22	10.15	106	110	70-130	4	30
Perfluorononanoic acid	9.60	9.79	9.60	9.49	102	99	70-130	3	30
Perfluorooctadecanoic acid	9.60	9.10	9.60	9.89	95	103	70-130	8	30
Perfluorooctanesulfonamide	9.60	9.06	9.60	9.35	94	97	70-130	3	30
Perfluorooctanesulfonic acid	9.18	7.72	9.18	8.20	84	89	70-130	6	30
Perfluorooctanoic acid	9.60	9.54	9.60	9.83	99	102	70-130	3	30
Perfluoropentanesulfonate	9.00	9.58	9.00	10.06	106	112	70-130	5	30
Perfluoropentanoic acid	9.60	9.32	9.60	9.46	97	99	70-130	2	30
Perfluorotetradecanoic acid	9.60	9.10	9.60	9.06	95	94	70-130	0	30
Perfluorotridecanoic acid	9.60	8.98	9.60	9.25	94	96	70-130	3	30
Perfluoroundecanoic acid	9.60	8.91	9.60	9.21	93	96	70-130	3	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2068476

Reported: 11/11/2019 12:18

## **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19290011

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1171813	94	141	190*	166	81	99
Blank	94	88	89	102	93	99
LCS	99	93	93	110	97	105
LCSD	105	102	97	123	109	106
Limits:	33-123	31-157	26-148	21-182	35-138	34-126
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1171813	101	154	96	93	106	86
Blank	92	112	95	91	92	89
LCS	98	116	99	102	102	100
LCSD	103	133	104	105	106	106
Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1171813	146	88	94	117	31*	56
Blank	106	97	92	110	84	90
LCS	120	112	102	117	93	97
LCSD	119	123	110	138	103	100
Limits:	27-164	30-127	30-128	30-142	39-130	26-119
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1171813	76	51	17	55	15	36*
Blank	89	89	62	84	69	78
LCS	94	104	86	102	91	82
LCSD	110	116	96	114	96	94
Limits:	11-127	10-128				

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

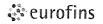
# Environmental Analysis Request/Chain of Custody

eurofins

Lancaster Laboratories Environmental Acct# 44293

Group # <u>2069476</u> Sample # <u>1171913</u>

J-26 TRENCH - i O O B / I O O O B / I O O O B / I O O O B / I O O O B / I O O O O B / I O O O O O O O O O O O O O O O O O O	Client: Chemours c/o of AECOM				Ī		Matrix					A	naly	ses	Requ	este	ed			For Lab Us	se Only
Project Manager:   P.O.#   PWSID #:   Public #:   Pu	Project Name: CWK - J-26 TRENCH SAMPLING	Site ID#:									Pre	serv	ation	and	l Filtı	ratio	n Co	des		SF#: <u>324067</u>	
Phone #: 8 To - X 10 - Z os C   Quote #: 219712   H = HC   T = Throwlines   State where samples were collected: NJ   For Compliance: Yes   No     H = HC   T = Throwlines   N = HBC   S = NBC   S =	Project Manager:	P.O.#				ens	nd													SCR#: <u>2475</u>	<u>17</u>
J-26 TRENCH - i O O B / I O - g - I O - I O	Sampler: UTODD /A, Heibel	PWSID#				Tis	Grou Surfa		S											Preserva	ion Codes
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J-26 TRENCH - i O O B / I O - g - I O - I O	State where samples were collected: NJ For C	Compliance:	Yes 🗸	No [		lime	tble ES		onta	(pc										N = HNO <sub>3</sub>	B = NaOH
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EDD Required? Yes No If yes, format: Locus EIM UPS FedEx Other Temperature upon receipt °C									°C												



Lancaster Laboratories Environmental

## Sample Administration Receipt Documentation Log

Doc Log ID:

262538

Group Number(s): 7068476

Client: Chemours

**Delivery and Receipt Information** 

Delivery Method:

**ELLE** Courier

Arrival Date:

10/08/2019

Number of Packages:

1

Number of Projects:

1

**Arrival Condition Summary** 

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

**Custody Seal Present:** 

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

Total Trip Blank Qty:

0

Samples Chilled:

Yes

Air Quality Samples Present:

No

Paperwork Enclosed:

Yes

Yes

Samples Intact: Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Tamara Lugardo

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#

Matrix Water

192050133

Thermometer ID Corrected Temp 0.6

Therm. Type IR

Ice Type Wet

<u>Ice Present?</u> <u>Ice Container</u> <u>Elevated Temp?</u>

Loose



Dry weight

basis

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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# **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.









#### **ANALYSIS REPORT**

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chemours c/o AECOM 9400 Amberglen Blvd. Austin TX 78729

Report Date: November 12, 2019 17:28

**Project: CWK - J-26 TRENCH SAMPLING** 

Account #: 44293 Group Number: 2070885 SDG: CWK05 PO Number: 117210 State of Sample Origin: NJ

Electronic Copy To AECOM Electronic Copy To AECOM Electronic Copy To AECOM Attn: Mike Aucoin Attn: Scott Norcross Attn: Kathy West

Kerri Sachtleben

Respectfully Submitted,

(717)-556-7376

To view our laboratory's current scopes of accreditation please go to <a href="https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. Historical copies may be requested through your project manager.









### **SAMPLE INFORMATION**

**Client Sample Description** 

Sample Collection
Date/Time

ELLE#

J-26 TRENCH-101819 Grab Water

10/18/2019 13:15

1183345

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



## Case Narrative

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Project Name: CWK - J-26 TRENCH SAMPLING

ELLE Group #: 2070885

#### **General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

#### **Analysis Specific Comments:**

#### SOP EPA537 T-PFAS-WI21398 ver4, LC/MS/MS Miscellaneous

### Sample #s: 1183345

The sample injection internal standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

#### Batch #: 19302012 (Sample number(s): 1183345)

The relative percent difference(s) for the following analyte(s) in the LCS/LCSD were outside acceptance windows: Perfluorooctadecanoic acid

The recovery(ies) for one or more surrogates exceeded the acceptance window indicating a positive bias for sample(s) 1183345

The recovery(ies) for one or more surrogates were below the acceptance window for sample(s) 1183345

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Sample Description: J-26 TRENCH-101819 Grab Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 10/22/2019 20:16
Collection Date/Time: 10/18/2019 13:15
SDG#: CWK05-01

Chemours c/o AECOM

ELLE Sample #: WW 1183345 ELLE Group #: 2070885

Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	/MS Miscellaneous SOP EPA53 T-PFAS-Wi	· <del>-</del>	ng/l	ng/l	ng/l	
14903	9CI-PF3ONS <sup>1</sup>	756426-58-1	2.0 U	2.0	0.51	1
	9CI-PF3ONS is the acronym for Potassiur 9-chlorohexadecafluoro-3-oxanonane-1-su	n Ilfonic acid				4
14903	11Cl-PF3OUdS¹ 11Cl-PF3OUdS is the acronym for 11-Chloroeicosafluoro-3-oxaundecane-1-s	763051-92-9	2.0 U	2.0	0.51	1
14903	DONA <sup>1</sup>	919005-14-4	2.0 U	2.0	0.51	1
	DONA is the acronym for 4,8-dioxa-3H-per form of ADONA.					·
14903	10:2Fluorotelomersulfonic acid¹	120226-60-0	5.1 U	5.1	1.0	1
14903	4:2-Fluorotelomersulfonic acid1	757124-72-4	2.0 U	2.0	0.51	1
14903	6:2-Fluorotelomersulfonic acid1	27619-97-2	48	5.1	2.0	1
14903	8:2-Fluorotelomersulfonic acid1	39108-34-4	3.1 U	3.1	1.0	1
14903	HFPODA <sup>1</sup>	13252-13-6	8,400	3,100	510	1000
	HFPODA is the acronym for 2,3,3,3-Tetra heptafluoropropoxy)-propanoic acid	fluoro-2-(1,1,2,2,3,3,	i,3-			
14903	NEtFOSAA1	2991-50-6	3.1 U	3.1	0.51	1
	NEtFOSAA is the acronym for N-ethyl perf	luorooctanesulfonam	midoacetic Acid.			
14903	NEtPFOSA <sup>1</sup>	4151-50-2	5.1 U	5.1	1.0	1
	NEtPFOSA is the acronym for N-ethylperfl	uoro-1-octanesulfona	namide			
14903	NEtPFOSAE <sup>1</sup>	1691-99-2	3.1 U	3.1	1.0	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-	ethanol				
14903	NMeFOSAA¹	2355-31-9	2.0 U	2.0	0.61	1
	NMeFOSAA is the acronym for N-methyl p	erfluorooctanesulfon	namidoacetic Acid.			
14903	NMePFOSA <sup>1</sup>	31506-32-8	3.1 U	3.1	1.0	1
	NMePFOSA is the acronym for N-methylpe	erfluoro-1-octanesulf	lfonamide			
14903	NMePFOSAE <sup>1</sup>	24448-09-7	3.1 U	3.1	1.0	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido	)-ethanol				
14903	Perfluorobutanesulfonic acid	375-73-5	3.7	2.0	0.51	1
14903	Perfluorobutanoic acid	375-22-4	1,400	51	20	10
14903	Perfluorodecanesulfonic acid <sup>1</sup>	335-77-3	2.0 U	2.0	0.51	1
14903	Perfluorodecanoic acid	335-76-2	14	2.0	0.51	1
14903	Perfluorododecanesulfonic acid <sup>1</sup>	79780-39-5	3.1 U	3.1	0.51	1
14903	Perfluorododecanoic acid	307-55-1	5.0	2.0	0.51	1
14903	Perfluoroheptanesulfonic acid¹	375-92-8	2.0 U	2.0	0.51	1
14903	Perfluoroheptanoic acid	375-85-9	100	2.0	0.51	1
14903	Perfluorohexadecanoic acid¹	67905-19-5	3.1 U	3.1	1.0	1
14903	Perfluorohexanesulfonic acid	355-46-4	2.1	2.0	0.51	1
14903	Perfluorohexanoic acid	307-24-4	320	2.0	0.51	1
14903	Perfluorononanesulfonic acid¹	68259-12-1	2.0 U	2.0	0.51	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



WW 1183345

2070885

Chemours c/o AECOM ELLE Sample #: WV

**ELLE Group #:** 

Matrix: Water

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Sample Description: J-26 TRENCH-101819 Grab Water

J-26 TRENCH SAMPLING

Project Name: CWK - J-26 TRENCH SAMPLING

Submittal Date/Time: 10/22/2019 20:16 Collection Date/Time: 10/18/2019 13:15

SDG#: CWK05-01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
LC/MS	MS Miscellaneous SOP EPA5		ng/l	ng/l	ng/l	
	T-PFAS-W	21398 ver4				
14903	Perfluorononanoic acid	375-95-1	21	2.0	0.51	1
14903	Perfluorooctadecanoic acid¹	16517-11-6	3.1 U	3.1	1.0	1
14903	Perfluorooctanesulfonamide1	754-91-6	2.0 U	2.0	0.51	1
14903	Perfluorooctanesulfonic acid	1763-23-1	2.2	2.0	0.51	1
14903	Perfluorooctanoic acid	335-67-1	64	2.0	0.51	1
14903	Perfluoropentanesulfonate1	2706-91-4	2.0 U	2.0	0.51	1
14903	Perfluoropentanoic acid	2706-90-3	1,200	20	5.1	10
14903	Perfluorotetradecanoic acid	376-06-7	2.0 U	2.0	0.51	1
14903	Perfluorotridecanoic acid	72629-94-8	6.4	2.0	0.51	1
14903	Perfluoroundecanoic acid	2058-94-8	8.4	2.0	0.51	1

The sample injection internal standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

### **Sample Comments**

State of New Jersey Lab Certification No. PA011

<sup>&</sup>lt;sup>1</sup> = This analyte was not on the laboratory's NJ DEP Scope of Accreditation at the time of analysis.

	Laboratory Sample Analysis Record												
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor						
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19302012	11/01/2019 01:35	Danielle D McCully	1						
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19302012	11/06/2019 21:49	Brian Kiser	10						
14903	NJ PFAS in Water by LC/MS/MS	SOP EPA537 T-PFAS-WI21398 ver4	1	19302012	11/06/2019 21:59	Brian Kiser	1000						
14904	NJ PFAS Water Prep	SOP EPA537 T-PFAS-WI21398 ver4	1	19302012	10/29/2019 17:00	Isaac Phillips-Cary	1						

<sup>\*=</sup>This limit was used in the evaluation of the final result

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2070885

Reported: 11/12/2019 17:28

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### **Method Blank**

Analysis Name	Res	ult	LOQ**	MDL
	ng/l		ng/l	ng/l
Batch number: 19302012	Sam	nple number(	s): 1183345	•
9CI-PF3ONS	2.0	'υ `	2.0	0.50
11CI-PF3OUdS	2.0	Ū	2.0	0.50
DONA	2.0	Ū	2.0	0.50
10:2Fluorotelomersulfonic acid	5.0	U	5.0	1.0
4:2-Fluorotelomersulfonic acid	2.0	U	2.0	0.50
6:2-Fluorotelomersulfonic acid	5.0	U	5.0	2.0
8:2-Fluorotelomersulfonic acid	3.0	U	3.0	1.0
HFPODA	3.0	U	3.0	0.50
NEtFOSAA	3.0	U	3.0	0.50
NEtPFOSA	5.0	U	5.0	1.0
NEtPFOSAE	3.0	U	3.0	1.0
NMeFOSAA	2.0	U	2.0	0.60
NMePFOSA	3.0	U	3.0	1.0
NMePFOSAE	3.0	U	3.0	1.0
Perfluorobutanesulfonic acid	2.0	U	2.0	0.50
Perfluorobutanoic acid	5.0	U	5.0	2.0
Perfluorodecanesulfonic acid	2.0	U	2.0	0.50
Perfluorodecanoic acid	2.0	U	2.0	0.50
Perfluorododecanesulfonic acid	3.0	U	3.0	0.50
Perfluorododecanoic acid	2.0	U	2.0	0.50
Perfluoroheptanesulfonic acid	2.0	U	2.0	0.50
Perfluoroheptanoic acid	2.0	U	2.0	0.50
Perfluorohexadecanoic acid	3.0	U	3.0	1.0
Perfluorohexanesulfonic acid	2.0	U	2.0	0.50
Perfluorohexanoic acid	2.0	U	2.0	0.50
Perfluorononanesulfonic acid	2.0	U	2.0	0.50
Perfluorononanoic acid	2.0	U	2.0	0.50
Perfluorooctadecanoic acid	3.0	U	3.0	1.0
Perfluorooctanesulfonamide	2.0	U	2.0	0.50
Perfluorooctanesulfonic acid	2.0	U	2.0	0.50
Perfluorooctanoic acid	2.0	U	2.0	0.50
Perfluoropentanesulfonate	2.0	U	2.0	0.50
Perfluoropentanoic acid	2.0	U	2.0	0.50
Perfluorotetradecanoic acid	2.0	U	2.0	0.50
Perfluorotridecanoic acid	2.0	U	2.0	0.50
Perfluoroundecanoic acid	2.0	U	2.0	0.50

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2070885

Reported: 11/12/2019 17:28

### LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19302012	Sample number(	(s): 1183345							
9CI-PF3ONS	8.95	8.05	8.95	8.90	90	99	70-130	10	30
11CI-PF3OUdS	9.04	7.23	9.04	8.19	80	91	70-130	12	30
DONA	9.04	9.33	9.04	10	103	111	70-130	7	30
10:2Fluorotelomersulfonic acid	27.76	27.13	27.76	27.82	98	100	70-130	3	30
4:2-Fluorotelomersulfonic acid	26.9	22.53	26.9	24.93	84	93	70-130	10	30
6:2-Fluorotelomersulfonic acid	27.3	27.11	27.3	27.84	99	102	70-130	3	30
8:2-Fluorotelomersulfonic acid	27.59	25.05	27.59	28.13	91	102	70-130	12	30
HFPODA	9.60	8.23	9.60	8.15	86	85	70-130	1	30
NEtFOSAA	9.60	8.44	9.60	9.29	88	97	70-130	10	30
NEtPFOSA	9.60	8.91	9.60	8.33	93	87	70-130	7	30
NEtPFOSAE	9.60	8.31	9.60	9.34	87	97	70-130	12	30
NMeFOSAA	9.60	9.77	9.60	9.25	102	96	70-130	5	30
NMePFOSA	9.60	11	9.60	9.74	115	102	70-130	12	30
NMePFOSAE	9.60	8.76	9.60	8.91	91	93	70-130	2	30
Perfluorobutanesulfonic acid	8.49	8.01	8.49	8.65	94	102	70-130	8	30
Perfluorobutanoic acid	9.60	10.87	9.60	11.4	113	119	70-130	5	30
Perfluorodecanesulfonic acid	9.24	8.99	9.24	10.03	97	108	70-130	11	30
Perfluorodecanoic acid	9.60	8.96	9.60	9.36	93	98	70-130	4	30
Perfluorododecanesulfonic acid	9.29	9.96	9.29	10.0	107	108	70-130	0	30
Perfluorododecanoic acid	9.60	9.14	9.60	9.71	95	101	70-130	6	30
Perfluoroheptanesulfonic acid	9.14	9.06	9.14	9.34	99	102	70-130	3	30
Perfluoroheptanoic acid	9.60	9.86	9.60	10.8	103	113	70-130	9	30
Perfluorohexadecanoic acid	9.60	8.92	9.60	9.92	93	103	70-130	11	30
Perfluorohexanesulfonic acid	9.08	8.29	9.08	9.24	91	102	70-130	11	30
Perfluorohexanoic acid	9.60	9.56	9.60	9.73	100	101	70-130	2	30
Perfluorononanesulfonic acid	9.21	9.20	9.21	10.64	100	115	70-130	14	30
Perfluorononanoic acid	9.60	8.85	9.60	9.94	92	104	70-130	12	30
Perfluorooctadecanoic acid	9.60	6.72	9.60	9.32	70	97	70-130	32*	30
Perfluorooctanesulfonamide	9.60	8.73	9.60	9.86	91	103	70-130	12	30
Perfluorooctanesulfonic acid	9.18	7.72	9.18	8.15	84	89	70-130	5	30
Perfluorooctanoic acid	9.60	9.71	9.60	10.17	101	106	70-130	5	30
Perfluoropentanesulfonate	9.00	9.42	9.00	9.56	105	106	70-130	2	30
Perfluoropentanoic acid	9.60	10.74	9.60	11.1	112	116	70-130	3	30
Perfluorotetradecanoic acid	9.60	8.57	9.60	9.53	89	99	70-130	11	30
Perfluorotridecanoic acid	9.60	9.24	9.60	8.95	96	93	70-130	3	30
Perfluoroundecanoic acid	9.60	9.08	9.60	10.53	95	110	70-130	15	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

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## **Quality Control Summary**

Client Name: Chemours c/o AECOM Group Number: 2070885

Reported: 11/12/2019 17:28

### **Labeled Isotope Quality Control**

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS

Batch number: 19302012

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1183345	88	215*	407*	123	78	97
Blank	89	84	86	98	94	91
LCS	92	91	91	98	94	95
LCSD	92	95	93	93	96	89
Limits:	33-123	31-157	26-148	21-182	35-138	34-126
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1183345	94	176*	102	98	103	96
Blank	90	103	89	87	85	93
LCS	96	102	96	91	96	103
LCSD	91	98	93	90	93	101
Limits:	35-126	32-170	48-122	50-121	41-144	47-125
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1183345	117	116	107	131	40	125*
Blank	98	86	98	103	87	95
LCS	119	100	101	115	103	107
LCSD	108	95	92	105	101	100
Limits:	27-164	30-127	30-128	30-142	39-130	26-119
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	13C3-HFPODA
1183345	96	90	53	96	52	10*
Blank	82	74	43	75	44	85
LCS	95	81	48	81	48	94
LCSD	93	85	52	82	57	94
Limits:	11-127	10-128	10-104	10-121	10-106	70-130

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

# Environmental Analysis Request/Chain of Custody

**::** eurofins

Lancaster Laboratories Environmental

Group # 2070985 Sample # 11 93345

Client: Chemours c/o of AECOM					Matrix				Α	naly	ses	s Requested					For Lab Use Only		
Project Name: CWK - J-26 TRENCH SAMPLING	Site ID #:								Pre	serv	ation	and	l Filti	ratio	n Co	des		SF#: <u>324067</u>	
Project Manager:	P.O.#			Tissue	ind													SCR#: <u>2475</u>	<u> 17</u>
Sampler: U, TODD	PWSID #:			⊒ ≌	Ground		,,											Preserva	tion Codes
Phone #: 856 . 540 - 3245	Quote #: 2	219712		ent 🗆		ı	iner											H = HCI	T = Thiosulfate
	Compliance:		No 🗌	mer.	ole ES		nta	ਓ										N = HNO <sub>3</sub>	B = NaOH
		ection	Grab	Sedi	Potable Pr NPDES	)r:	Total # of Containers	s (537 Mod)										S = H₂SO₄ F = Field Filtered	$P = H_3 PO_4$ $O = Other$
Sample Identification	Date	Time	Grab	Soil	Water	Other:	Tota	PFAS										Ren	narks
J-26 TRENCH - 101819	10/8/4	1315	X	Ť	Х		32					**							
	7 3/11																		
						<u> </u>													
														<u> </u>		-			
						-	2							<u> </u>		<u> </u>			
				- Dal	nquished				Da	to	Tir		Poor	eived	by:			Date	Time
Turnaround Time Requested (TAT) (please che	•	dard 🗹	Rush [	-'		•					I		Vece	siveu	Dy.	/		Date	Time
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Data Package Options (please check if required)         Type I (Validation/non-CLP)       ✓       MA MCP					1/									•		,			
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	es, format:			UPS	UPS FedEx Other Temperature upon					pon re	eceipt	1, V	°C						



# Sample Administration Receipt Documentation Log

Doc Log ID: 263786

Group Number(s): 2070885

Client: Chemours

**Delivery and Receipt Information** 

Delivery Method: <u>ELLE Courier</u> Arrival Date: <u>10/22/2019</u>

Number of Packages:  $\underline{1}$  Number of Projects:  $\underline{1}$ 

State/Province of Origin: NJ

**Arrival Condition Summary** 

Shipping Container Sealed: Yes Sample IDs on COC match Containers: Yes

Custody Seal Present: Yes Sample Date/Times match COC: Yes

Custody Seal Intact: Yes Total Trip Blank Qty: 0

Samples Chilled: Yes Air Quality Samples Present: No

Paperwork Enclosed: Yes

Samples Intact: Yes

Missing Samples: No

Extra Samples: No

Discrepancy in Container Qty on COC: No

Unpacked by Tamara Lugardo

**Samples Chilled Details** 

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler # Corrected Temp Matrix Thermometer ID Therm. Type Ice Type Ice Present? Ice Container **Elevated Temp?** DT42-03 DT Wet Ν 1.0 Bagged Water



Dry weight

basis

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight uivalent to one microliter per liter of gas.
daa	parts per billion		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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# **Data Qualifiers**

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

# Appendix E - NJPDES DSN662 Analytical Results (2019)

#### Appendix E NJPDES DSN662 Analytical Results (2019) Krytox J-26 EIPT Report Chemours Chambers Works

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		Location ID	DSN 662A								
		Date Sampled	01/07/2019	01/14/2019	01/21/2019	01/28/2019	02/04/2019	02/11/2019	02/18/2019	02/25/2019	03/04/2019
Parameter Name	Analytical Method	Units	Report Result								
Perfluorobutane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.053	0.055	0.073	0.29	0.19 J	0.11 J	0.13	0.1	0.11
Perfluorobutanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	4.4	4.5	5.7	3.4	5.0 J	7.0 J	9.4	8.3	3.8
Perfluorodecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.46	0.48	0.42	0.46	0.33 J	0.35 J	0.37	0.57	0.5
Perfluorododecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.065	0.052	0.058	0.066	0.087 J	0.13 J	0.042	0.045	0.059
Perfluoroheptanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.9	3.7	3.3	3.4	2.1 J	3.2 J	4.6	11	2.4
Perfluorohexane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	<0.0020	0.017	0.011	<0.0020	0.0053 J	0.0066 J	0.06	0.029	<0.015
Perfluorohexanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	18	21	27	18	16 J	17 J	33	26	15
Perfluorononanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.34	0.33	0.29	0.29	0.22 J	0.28 J	0.48	0.47	0.3
Perfluoropentanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.4	3.7	3.4	2.9	2.8 J	4.0 J	5.8	6.1	2.7
Perfluoroundecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.047	0.038	0.047	0.048	0.048 J	0.054 J	0.032	0.034	0.042
PFOA	EPA 537 Rev. 1.1 modified	UG/L	5.4	4.9	4.1	4.1	3.2 J	4.2 J	11	7.9	5
PFOS	EPA 537 Rev. 1.1 modified	UG/L	0.019	0.018	0.013	0.016	0.0094 J	0.0099 J	0.02	0.018	0.013
Hfpo Dimer Acid	EPA 537 Rev. 1.1 modified	UG/L	13	6.8	13	18	4.7 J	9.7 J	12	6.2	8.6
Perfluorotetradecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.013	0.0087	0.0096	0.013	0.023 J	0.039 J	0.0093	0.0035	0.0092
Perfluorotridecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	<0.012	<0.012	0.0059	<0.012	0.012 J	0.023 J	0.0056	<0.013	0.0059
Perfluorooctane Sulfonamide	EPA 537 Rev. 1.1 modified	UG/L	<0.0032	<0.0033	<0.0020	<0.0033	<0.0020 UJ	<0.0020 UJ	<0.0020	<0.0034	<0.0020

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		Location ID	DSN 662A							
		Date Sampled	03/11/2019	03/18/2019	03/25/2019	04/01/2019	04/08/2019	04/15/2019	04/22/2019	04/29/2019
Parameter Name	Analytical Method	Units	Report Result							
Perfluorobutane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.066	0.05	0.07	0.089	0.046	0.053	0.059	0.066
Perfluorobutanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.8	5.8	4.2	4	5.3	6.8	8.2	5.4
Perfluorodecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.46	0.32	0.45	0.36	0.38	0.36	0.4	0.55
Perfluorododecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.03	0.028	0.055	<0.054	<0.051	<0.054	<0.052	0.057
Perfluoroheptanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	2.5	5.7	5.1	9	6.2	4	5.5	5.2
Perfluorohexane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.012	0.01	0.017	<0.017	<0.016	<0.017	<0.016	<0.016
Perfluorohexanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	15	22	24	22	27	41	37	23
Perfluorononanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.3	0.26	0.32	0.29	0.24	0.29	0.37	0.36
Perfluoropentanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	2.7	4.1	4.2	4.2	4	4.8	6	4.2
Perfluoroundecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.03	0.031	0.044	<0.11	<0.10	<0.11	<0.10	<0.11
PFOA	EPA 537 Rev. 1.1 modified	UG/L	5.3	4.9	3.6	3.2	3.8	3.7	3.9	3.6
PFOS	EPA 537 Rev. 1.1 modified	UG/L	0.013	0.0099	0.013	1.6	<0.051	0.11	<0.051	<0.052
Hfpo Dimer Acid	EPA 537 Rev. 1.1 modified	UG/L	9.2	8.7	8.4	7.9	9.3	14	10	15
Perfluorotetradecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0043	0.0034	0.0099	<0.029	<0.027	<0.028	<0.028	<0.028
Perfluorotridecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0029	0.0024	<0.012	<0.13	<0.12	<0.13	<0.12	<0.12
Perfluorooctane Sulfonamide	EPA 537 Rev. 1.1 modified	UG/L	<0.0020	<0.0020	<0.0033	<0.035	<0.033	<0.034	<0.033	<0.034

#### Appendix E NJPDES DSN662 Analytical Results (2019) Krytox J-26 EIPT Report Chemours Chambers Works

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		Location ID	DSN 662A							
		Date Sampled	05/06/2019	05/13/2019	05/20/2019	05/28/2019	06/03/2019	06/10/2019	06/17/2019	06/24/2019
Parameter Name	Analytical Method	Units	Report Result							
Perfluorobutane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.045	0.05	0.055	0.043	0.067	0.049	0.076	0.15
Perfluorobutanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3	3.8	5.1	7.2	5.1	6	4.8	6.1
Perfluorodecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.5	0.5	0.5	0.56	0.57	0.68	0.5	0.74
Perfluorododecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.058	0.064	0.047	0.057	0.087	0.086	0.044	0.084
Perfluoroheptanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.4	4.9	4.8	6.5	5.9	3.3	3.1	3.4
Perfluorohexane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0089	0.0097	0.012	0.0073	<0.015	<0.016	0.012	0.014
Perfluorohexanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	17	26	28	25	27	26	30	30
Perfluorononanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.27	0.31	0.35	0.29	0.32	0.35	0.34	0.48
Perfluoropentanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	2.9	3.4	3.8	4.8	4.3	4.2	3.4	4.3
Perfluoroundecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.058	0.065	0.053	0.066	<0.10	<0.11	0.05	0.072
PFOA	EPA 537 Rev. 1.1 modified	UG/L	2.6	3.3	4	3.3	3.7	4.3	4.8	4.8
PFOS	EPA 537 Rev. 1.1 modified	UG/L	0.0092	0.012	0.015	0.011	<0.049	<0.052	0.013	0.028
Hfpo Dimer Acid	EPA 537 Rev. 1.1 modified	UG/L	10	7	14	7.3	10	7	12	5.1
Perfluorotetradecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.009	0.01	0.0072	0.0074	<0.026	<0.028	0.0084	<0.014
Perfluorotridecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0064	0.0074	<0.025	0.0053	<0.12	<0.13	0.0054	<0.062
Perfluorooctane Sulfonamide	EPA 537 Rev. 1.1 modified	UG/L	<0.0020	<0.0020	<0.0066	<0.0020	<0.032	<0.034	<0.0020	<0.017

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		Location ID	DSN 662A							
		Date Sampled	07/01/2019	07/08/2019	07/15/2019	07/22/2019	07/29/2019	08/05/2019	08/12/2019	08/19/2019
Parameter Name	Analytical Method	Units	Report Result							
Perfluorobutane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.059	0.042	0.066	0.045	0.051	0.048	0.054	0.042
Perfluorobutanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	8.6	8.6	6.7	5	4	4.5	3.4	5.2
Perfluorodecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.63	0.59	0.96	0.82	0.7	0.63	0.55	0.63
Perfluorododecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.058	0.068	0.068	0.049	0.073	0.064	0.068	0.058
Perfluoroheptanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	4	3.6	3.1	3.1	2.7	6.6	2.7	2
Perfluorohexane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.022	0.012	0.013	0.012	0.011	0.006	0.0064	<0.017
Perfluorohexanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	37	40	32	27	29	22	26	28
Perfluorononanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.34	0.28	0.34	0.32	0.3	0.27	0.33	0.39
Perfluoropentanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	5.5	5	4.6	3.9	3.4	4.5	2.8	3.2
Perfluoroundecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.062	0.051	0.076	0.059	0.068	0.067	<0.10	<0.11
PFOA	EPA 537 Rev. 1.1 modified	UG/L	4.9	3.1	4.9	5.5	4.1	3.9	4.2	4
PFOS	EPA 537 Rev. 1.1 modified	UG/L	0.022	0.044	0.018	0.041	0.018	0.015	<0.051	<0.053
Hfpo Dimer Acid	EPA 537 Rev. 1.1 modified	UG/L	2	1.9	1.4	3.2	3.5	1.8	3.9	4
Perfluorotetradecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0054	<0.013	0.0076	<0.013	0.0085	0.0054	0.0071	<0.028
Perfluorotridecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.0056	<0.060	0.0059	<0.060	0.0079	0.005	0.0058	<0.13
Perfluorooctane Sulfonamide	EPA 537 Rev. 1.1 modified	UG/L	<0.0020	<0.016	<0.0020	<0.016	<0.0020	<0.0020	<0.033	<0.034

#### Appendix E NJPDES DSN662 Analytical Results (2019) Krytox J-26 EIPT Report Chemours Chambers Works

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		Location ID	DSN 662A							
		Date Sampled	08/26/2019	09/03/2019	09/09/2019	09/16/2019	09/23/2019	09/30/2019	10/07/2019	10/14/2019
Parameter Name	Analytical Method	Units	Report Result							
Perfluorobutane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.046	0.047	0.041	0.041	0.045 J	0.054 J	0.036	0.041
Perfluorobutanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.3	6.8	4	3	3	4.2	3.8	3.9
Perfluorodecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.58	0.46	0.43	0.37	0.42	0.43	0.3	0.31
Perfluorododecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.06	0.042	0.066	0.07	0.086	0.032	0.052	0.07
Perfluoroheptanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	2.1	4.1	1.9	1.7	2.1	2.4	3.1	2.1
Perfluorohexane Sulfonic Acid	EPA 537 Rev. 1.1 modified	UG/L	<0.017	<0.016	<0.017	<0.017	0.008	0.0075	<0.016	<0.018
Perfluorohexanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	19 J	30 J	17	15	13	18	14	22
Perfluorononanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.37	0.24	0.24	0.23	0.24	0.28	0.22	0.23
Perfluoropentanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	3.3	4	2.9	2.8	2.8	3.3	3.1	3.3
Perfluoroundecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	0.057	0.04	0.048	0.045	0.047	0.037	0.031	0.034
PFOA	EPA 537 Rev. 1.1 modified	UG/L	4.2	4.7	3	3.5	3.2	3.8	2.8	3.5
PFOS	EPA 537 Rev. 1.1 modified	UG/L	<0.017	<0.016	<0.017	<0.017	0.0084	0.0086	<0.016	<0.018
Hfpo Dimer Acid	EPA 537 Rev. 1.1 modified	UG/L	3.1	1.2	1.9	2.7	2.6 J	1.2	0.82	1.6
Perfluorotetradecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	<0.017	<0.016	<0.017	<0.017	0.008	<0.0049	<0.016	<0.018
Perfluorotridecanoic Acid	EPA 537 Rev. 1.1 modified	UG/L	<0.017	<0.016	<0.017	<0.017	0.012	<0.0049	<0.016	<0.018
Perfluorooctane Sulfonamide	EPA 537 Rev. 1.1 modified	UG/L	<0.017	<0.016	<0.017	<0.017	<0.0017	<0.0049	<0.016	<0.018